



# **STIC Search Report**

**EIC 1700**

**STIC Database Tracking Number: 178837**

**TO: Ardith Hertzog**  
**Location: REM 9A20**  
**Art Unit : 1754**  
**February 8, 2006**

**Case Serial Number:**  
-----

**From: Kathleen Fuller**  
**Location: EIC 1700**  
**REMSEN 4B28**  
**Phone: 571/272-2505**  
**Kathleen.Fuller@uspto.gov**

## **Search Notes**

Claim 11 but limited by X in claims 12 and 13 because 11 is just too broad.

Access DB# 198837

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: ARDITH E. HERTZOG Examiner #: 71465 Date: 2.7.06  
 Art Unit: 1754 Phone Number 302-1247 Serial Number: PCT-4504-05645  
 Mail Box and Bldg/Room Location: Rem 9A20 Results Format Preferred (circle) PAPER DISK E-MAIL  
(Office)

If more than one search is submitted, please prioritize searches in order of need. (doesn't matter)  
 \*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Per attached BIB DATA SHEET =>

Inventors (please provide full names): 11

Earliest Priority Filing Date: 11

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

786A

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf - Cnt

FEB REC

Pat. &amp; T.M. Office

Please search for  
 polyoxometalates  
 of the attached

cl. ~~11~~ 11 (can narrow  
 to cl. 12-13

if necessary)

Thank you,  
 J. Hertzog

Searcher: <u>K. Fuller</u>	NA Sequence (#) _____	STN <u>11</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>2</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>2/8/06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>40</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>35</u>	Other _____	Other (specify) _____

Claim 11-13

=> file reg

FILE 'REGISTRY' ENTERED AT 10:47:42 ON 08 FEB 2006  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2006 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 6 FEB 2006 HIGHEST RN 873652-66-5  
DICTIONARY FILE UPDATES: 6 FEB 2006 HIGHEST RN 873652-66-5

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2005

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

\*\*\*\*\*  
\*  
\* The CA roles and document type information have been removed from \*  
\* the IDE default display format and the ED field has been added, \*  
\* effective March 20, 2005. A new display format, IDERL, is now \*  
\* available and contains the CA role and document type information. \*  
\*  
\*\*\*\*\*

Structure search iteration limits have been increased. See HELP SLIMITS  
for details.

REGISTRY includes numerically searchable data for experimental and  
predicted properties as well as tags indicating availability of  
experimental property data in the original document. For information  
on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> file hcaplu

FILE 'HCAPLUS' ENTERED AT 10:47:47 ON 08 FEB 2006  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is  
held by the publishers listed in the PUBLISHER (PB) field (available  
for records published or updated in Chemical Abstracts after December  
26, 1996), unless otherwise indicated in the original publications.  
The CA Lexicon is the copyrighted intellectual property of the  
the American Chemical Society and is provided to assist you in searching  
databases on STN. Any dissemination, distribution, copying, or storing  
of this information, without the prior written consent of CAS, is  
strictly prohibited.

FILE COVERS 1907 - 8 Feb 2006 VOL 144 ISS 7  
FILE LAST UPDATED: 7 Feb 2006 (20060207/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que 132

L2 41 SEA FILE=REGISTRY ABB=ON (100-42-5/BI OR 10108-73-3/BI OR 10141-05-6/BI OR 10421-48-4/BI OR 107-92-6/BI OR 109-52-4/BI OR 110-81-6/BI OR 110-86-1/BI OR 13093-17-9/BI OR 13138-45-9/BI OR 134360-58-0/BI OR 13770-18-8/BI OR 3251-23-8/BI OR 34946-82-2/BI OR 352-93-2/BI OR 38465-60-0/BI OR 50-00-0/BI OR 503-74-2/BI OR 505-60-2/BI OR 57-12-5/BI OR 59858-44-5/BI OR 624-92-0/BI OR 630-08-0/BI OR 693-07-2/BI OR 74-93-1/BI OR 7439-89-6/BI OR 7440-22-4/BI OR 7440-33-7/BI OR 7440-38-2/BI OR 7440-45-1/BI OR 75-07-0/BI OR 75-18-3/BI OR 75-44-5/BI OR 75-50-3/BI OR 7664-41-7/BI OR 7704-34-9/BI OR 7727-37-9/BI OR 7783-06-4/BI OR 79-09-4/BI OR 795308-36-0/BI OR 796042-78-9/BI)

L4 1314652 SEA FILE=REGISTRY ABB=ON ((P OR S OR SI OR AL OR B OR ZN OR CO OR FE) (L) M(L) O) /ELS

L5 444419 SEA FILE=REGISTRY ABB=ON L4 AND 2/NC

L6 10926 SEA FILE=REGISTRY ABB=ON L5 AND 25-80/O

L7 2409 SEA FILE=REGISTRY ABB=ON L6 NOT X/ELS

L11 6 SEA FILE=REGISTRY ABB=ON L2 AND NITRATE

L18 16041 SEA FILE=HCAPLUS ABB=ON L11

L21 17241 SEA FILE=HCAPLUS ABB=ON L7

L22 3514 SEA FILE=HCAPLUS ABB=ON L21 (L) CAT/RL

L23 113 SEA FILE=HCAPLUS ABB=ON L22 (L) ?OXOMETAL?

L24 4 SEA FILE=HCAPLUS ABB=ON L23 AND COMPOSITION?

L25 13 SEA FILE=HCAPLUS ABB=ON L23 AND (L18 OR NITRATE?)

L26 708 SEA FILE=HCAPLUS ABB=ON L22 (L) HETEROPOLY?

L27 38 SEA FILE=HCAPLUS ABB=ON L26 AND COMPOSITION?

L28 19 SEA FILE=HCAPLUS ABB=ON L26 AND (L18 OR NITRATE?)

L29 8 SEA FILE=HCAPLUS ABB=ON (L23 OR L28) AND (POLLUTION? OR TOXIC?)/SC, SX

L30 77 SEA FILE=HCAPLUS ABB=ON L24 OR L25 OR (L27 OR L28 OR L29)

L32 70 SEA FILE=HCAPLUS ABB=ON L30 AND (1840-2004)/PY, AY, PRY

*claim 11  
limited by  
12413  
9,409  
compounds*

*70 CA references*

=> d 132 bib abs hitind hitstr 1-70

L32 ANSWER 1 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:1299152 HCAPLUS

TI Preparation and application of dealuminated ultra-stable Y zeolite-supported heteropolyacid salt catalysts

IN Wang, Jun; Zhang, Fumin

PA Nanjing University of Technology, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 14 pp. CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1583253	A	20050223	CN 2004-10044811	20040604 <--
PRAI	CN 2004-10044811		20040604	<--	

AB The title catalysts are prepared by: (1) mixing ultra-stable Y (USY) zeolites with deionized water at the weight ratio of 1 : 0.8-5, treating by self-steaming at 500-900ÅC for 2-10 h, filter-washing with a 1-5 mol/L acid solution at 60-100ÅC for 1-10 h, filtering, drying, and calcining to obtain the dealuminated ultra-stable Y zeolites as the catalyst supports, and (2) immersing the supports in a water solution of alkali-metal carbonate



or **nitrate**, drying, calcining, immersing in an appropriate amount of heteropolyacid solution, drying, and calcining to obtain the final catalysts. The obtained catalysts can be used in the liquid-phase esterification between acetic acid and n-butanol with the advantages of low reaction temperature and high conversion rate.

IC ICM B01J023-16

ICS B01J027-188; B01J029-08

CC 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

IT INDEXING IN PROGRESS

IT 12026-91-4P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation and application of dealuminated ultra-stable Y zeolite-supported **heteropolyacid** salt catalysts)

IT 584-08-7, Potassium carbonate 1343-93-7, dodeca-tungstophosphoric acid (H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>•20H<sub>2</sub>O) 6484-52-2, Ammonium **nitrate**

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation and application of dealuminated ultra-stable Y zeolite-supported heteropolyacid salt catalysts)

IT 12026-91-4P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation and application of dealuminated ultra-stable Y zeolite-supported **heteropolyacid** salt catalysts)

RN 12026-91-4 HCAPLUS

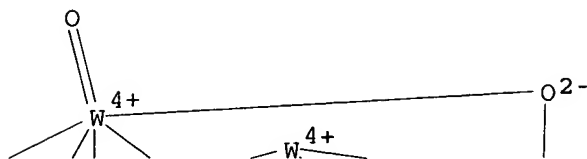
CN Tungstate(3-), tetracosam-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':.kappa

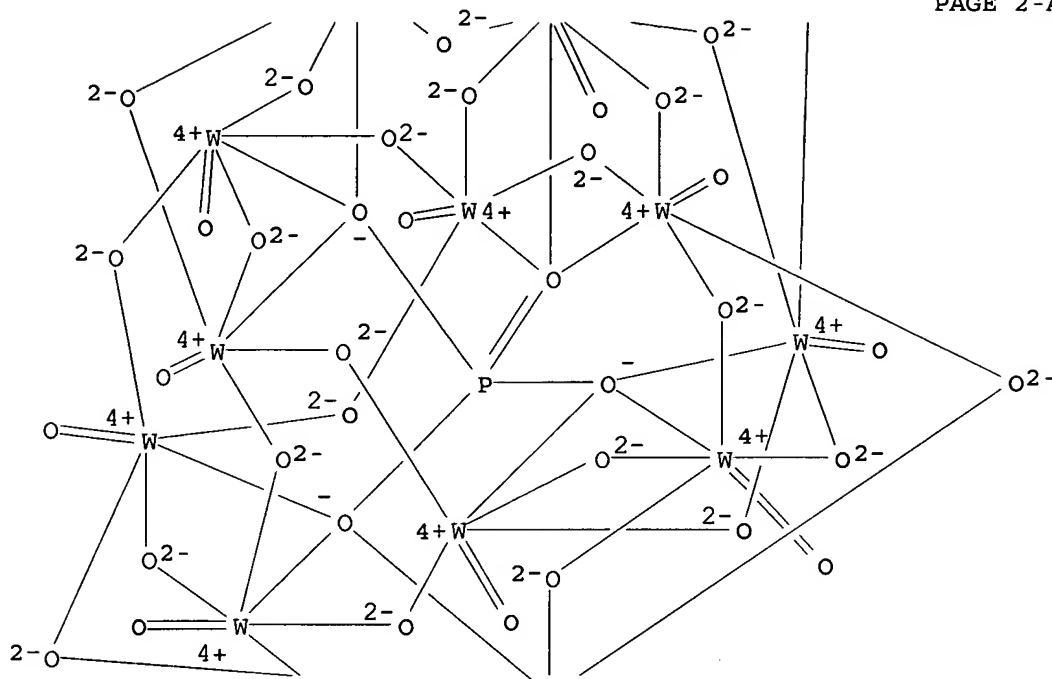
.O':κO':κO':κO':κO':κO']dodeca-, tricesium

(9CI) (CA INDEX NAME)

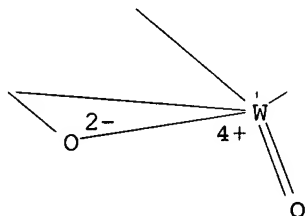
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 Cs<sup>+</sup>

L32 ANSWER 2 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:559343 HCAPLUS  
 DN 143:153081  
 TI Hydrolysis method of esters  
 IN Chen, Haibo  
 PA China Petroleum & Chemical Corporation, Peop. Rep. China  
 SO Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp. given  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1541991	A	20041103	CN 2003-122853	20030429 <--

20030429 <--

IC ICM C07C027-02

Section cross-reference(s): 25

RL: CAT (Catalyst use); USES (Uses)

IT 1343-93-7D, 12-Phosphotungstic acid, reaction product with amine

amine 12027-38-2D, reaction product with ammonium

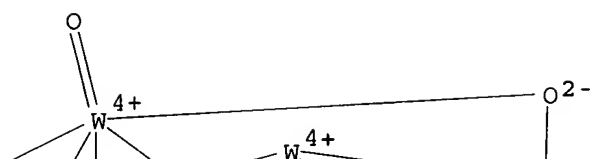
RL: CAT (Catalyst use); USES (Uses)

RN 1343-93-7 HCAPLUS

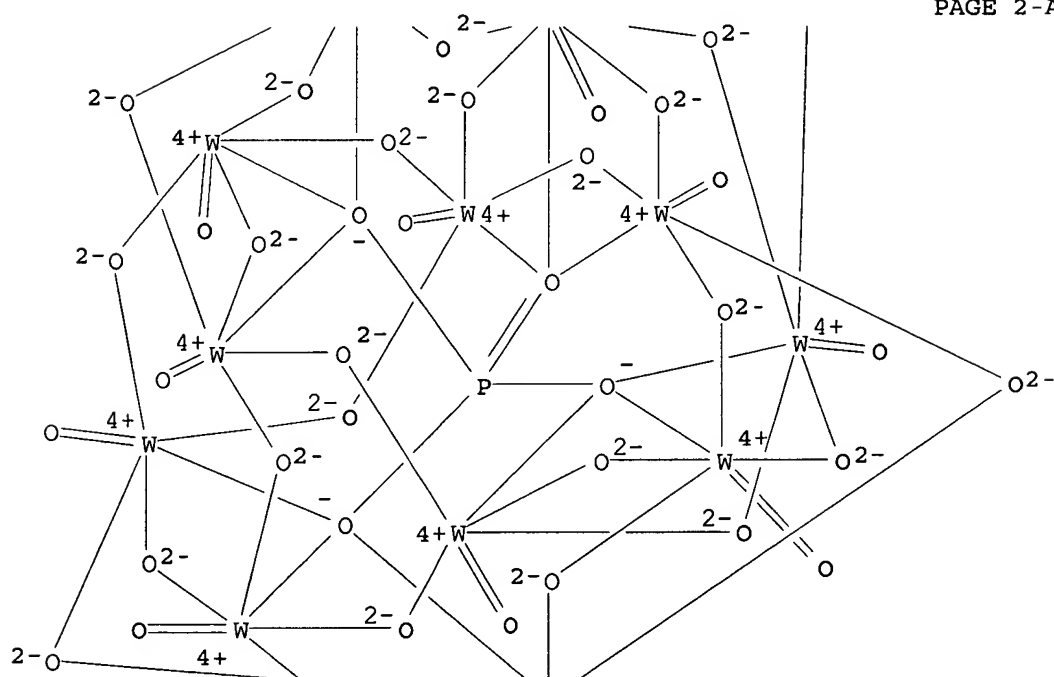
 $\kappa_0 : \kappa_0 : \kappa_0 : \kappa_0' : \kappa_0' : \kappa_0' : \kappa_0' : \dots$  kappa

(9CI) (CA INDEX NAME)

PAGE 1-A

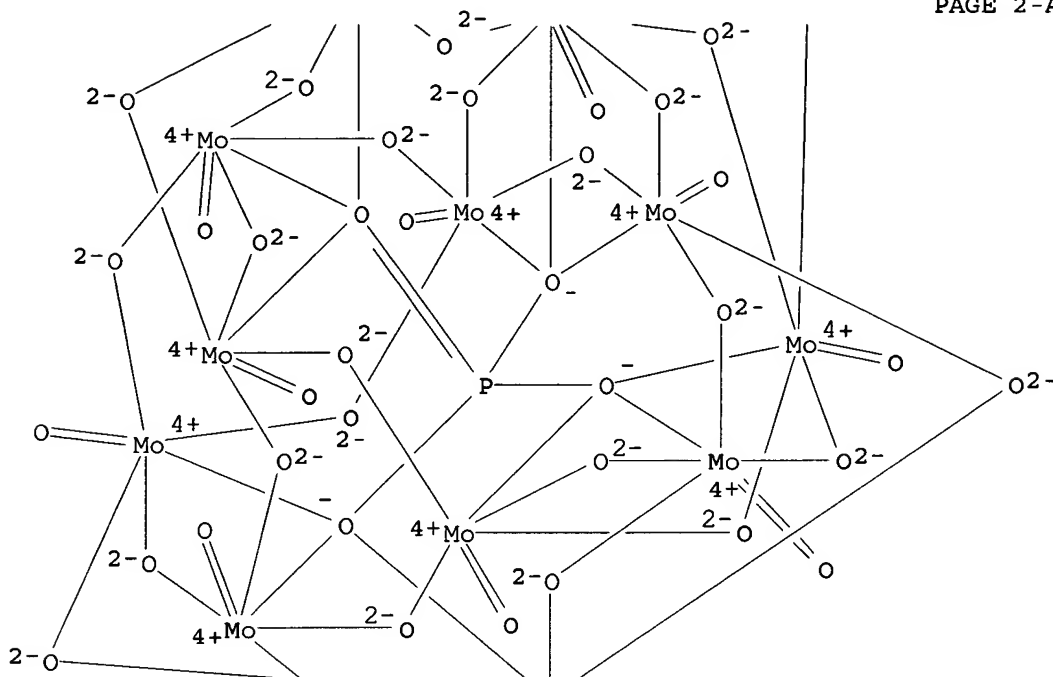


PAGE 2-A

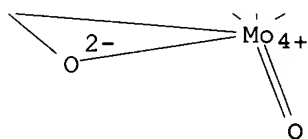




PAGE 2-A



PAGE 3-A



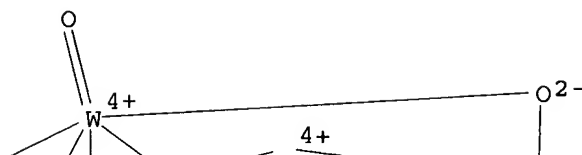
●<sub>3</sub> H<sup>+</sup>

```

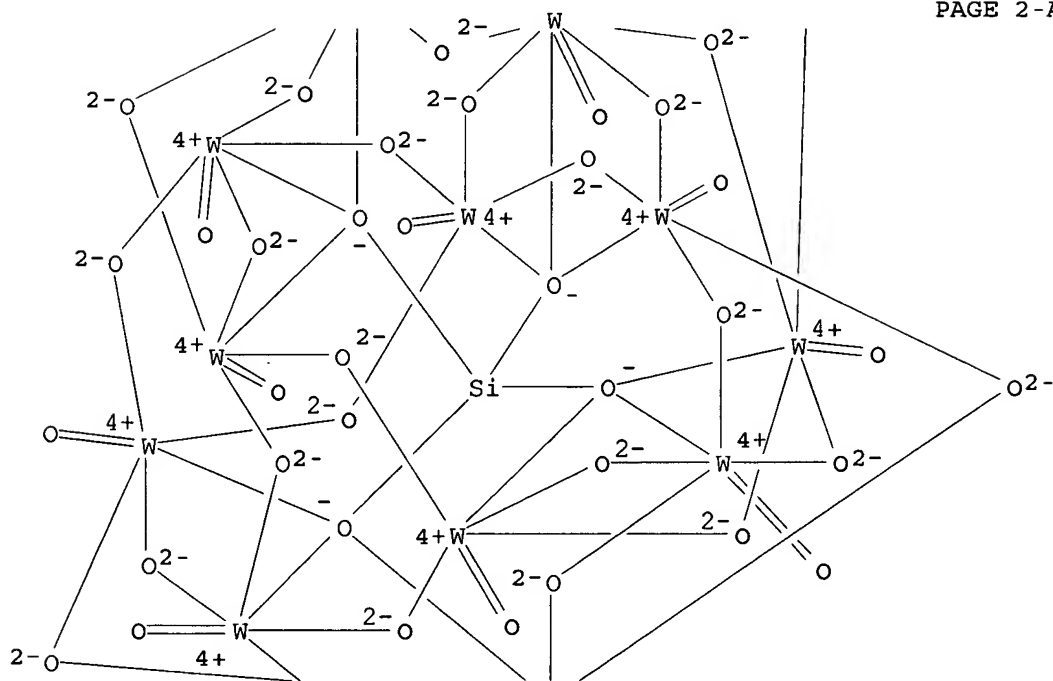
RN      12027-38-2      HCAPLUS
CN      Tungstate(4-), [μ12-{orthosilicato(4-)-κO:κO:κO:..kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO'''}]]tetracosα-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

```

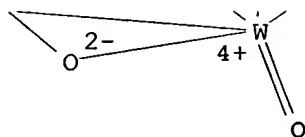
PAGE 1-A



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

L32 ANSWER 3 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:522436 HCAPLUS

DN 143:61609

TI Bleaching method using metal disubstituted defect polyoxometalate  
 IN Hayakawa, Shoichi; Kawabata, Yasunari; Okazaki, Tadashi; Hamaguchi,  
 Takayoshi; Miyazaki, Tadashi

PA Mitsubishi Gas Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005154937	A2	20050616	JP 2003-394095	20031125 <--
PRAI	JP 2003-394095		20031125 <--		

AB Chemical pulp for paper making is bleached using a metal disubstituted defect hetero polyoxometalate, [SiM<sub>2</sub>W<sub>10</sub>O<sub>40</sub>]<sup>q-</sup>, wherein M = transition metal atom, q = integer, and oxidants, such as H<sub>2</sub>O<sub>2</sub>, peracetic acid, O<sub>2</sub>, sodium percarbonate, sodium borate. Thus, chemical pulp was bleached by H<sub>2</sub>O<sub>2</sub> in the presence of Fe-substituted γ-cesium tungstosilicate.

IC ICM D21C009-16

ICS D06L003-02; D21C009-10

CC 43-6 (Cellulose, Lignin, Paper, and Other Wood Products)

IT 638-38-0DP, Manganese acetate, reaction products with Keggin-type potassium tungstosilicate, cesium **nitrate**, and potassium permanganate 7722-64-7DP, Potassium permanganate, reaction products with Keggin-type potassium tungstosilicate, cesium **nitrate**, and manganese acetate 7789-18-6DP, Cesium **nitrate**, reaction products with Keggin-type potassium tungstosilicate and others 10099-59-9DP, Lanthanum **nitrate**, reaction products with Keggin-type potassium tungstosilicate and cesium **nitrate** 10421-48-4DP, Iron trinitrate, reaction products with Keggin-type potassium tungstosilicate and cesium **nitrate** 102073-48-3DP, reaction products with iron trinitrate/manganese acetate/lanthanum **nitrate** and others

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)

(bleaching method using metal disubstituted defect  
 polyoxometalate)

IT 10421-48-4DP, Iron trinitrate, reaction products with Keggin-type potassium tungstosilicate and cesium **nitrate**  
 102073-48-3DP, reaction products with iron trinitrate/manganese acetate/lanthanum **nitrate** and others

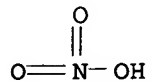
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)



(bleaching method using metal disubstituted defect  
polyoxometalate)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●<sub>1/3</sub> Fe (III)

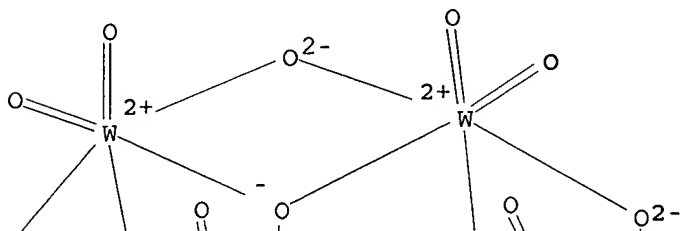
RN 102073-48-3 HCAPLUS

CN Tungstate(8-), [μ10-[orthosilicato(4-)-κO:κO:κO:.kapp

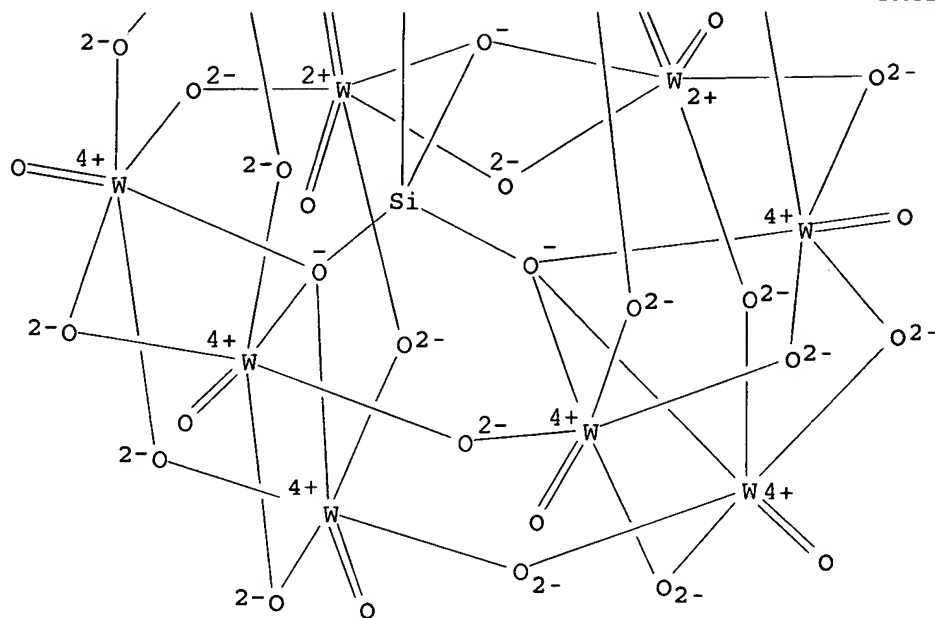
$$a.0' : \kappa 0' : \kappa 0' : \kappa 0'' : \kappa 0'' : \kappa 0''' : \kappa 0'''' ] ] \text{oc}$$

tadeca-μ-oxotetradeca-oxodeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



PAGE 3-A

● 8 K<sup>+</sup>

L32 ANSWER 4 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:9522 HCAPLUS

DN 142:93424

TI Element-substituted heteropolyoxometallates, their preparation, and uses as oxidation catalysts

IN Yonehara, Hiroshi; Sumida, Yasutaka

PA Nippon Shokubai Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005002027	A2	20050106	JP 2003-165939	20030611 <--
PRAI	JP 2003-165939		20030611	<--	

OS CASREACT 142:93424

AB The compds. comprise (A) heteropolyoxometallate anions having two-defect structures containing Si or P as heteroatoms and polyatoms chosen from Mo, W, V, and Nb and (B) 2 other elements incorporated in the defects.

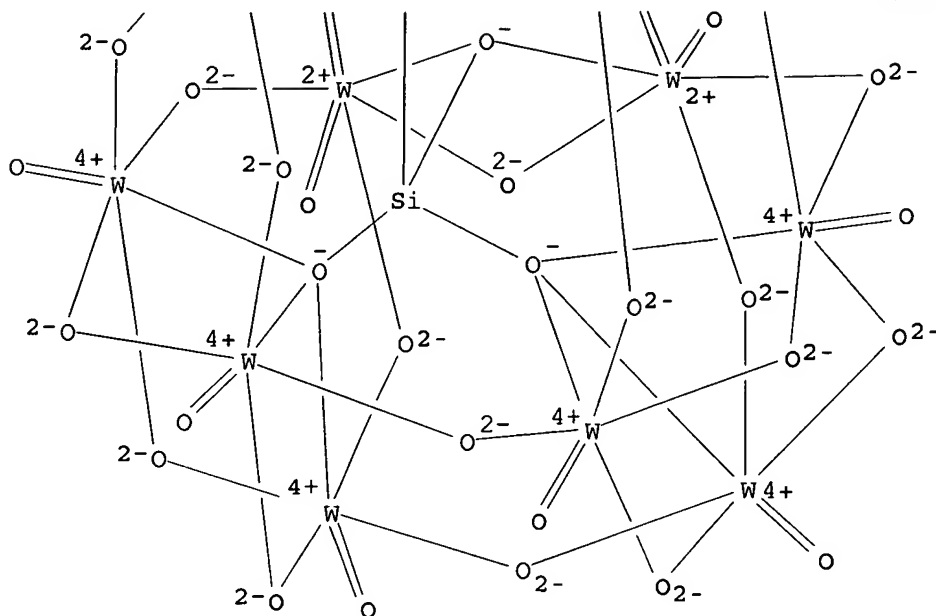
K8[ $\gamma$ -SiW10O36].12H2O was treated with Na2MoO4.2H2O, Fe(NO3)3.9H2O, and Bu4NBr (TBABr) at pH 5 to give (TBA)xHy[ $\gamma$ -SiFe0.93(OH2)0.93Mo0.7W10O38.7] (x, y = 0-6), which was used in oxidation of cyclohexane to give 0.5% cyclohexanol and 0.4% cyclohexanone.

IC ICM C07C211-63

ICS B01J031-34; B01J031-36; C07B061-00; C07C029-50; C07C035-08;  
C07C045-33; C07C049-403; C07D301-06; C07D303-04



PAGE 2-A



PAGE 3-A

● 8 K<sup>+</sup>

L32 ANSWER 5 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN.

AN 2004:999712 HCAPLUS

DN 141:427184

TI Compositions, materials incorporating the compositions  
, and methods of using the compositions and materialsIN Okun, Nelya; Hill, Craig L.

PA USA

SO U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004230086	A1	20041118	<u>US 2004-786671</u>	20040225 <--
	WO 2005021435	A2	20050310	WO 2004-US5645	20040225 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2003-449892P	P	20030225	<--	

*application*

US 2004-786671 A 20040225 <--

AB Compns. that can protect and/or remove contaminants such as warfare agents from the environment in which people are operating are disclosed, as are materials incorporating the compns., and methods of use thereof. In one embodiment, the **composition** includes a metal **nitrate** selected from d-block metal **nitrates** and f-block metal **nitrates** and a metal salt having weakly bound counter anions. The metal of the metal salt having weakly bound counter anions is selected from a d-block metal and an f-block metal. Another embodiment of the **composition** includes a first polyoxometalate having a first metal selected from a d-block metal and an f-block metal and a second polyoxometalate having a second metal selected from a d-block metal and an f-block metal, the first metal being an open coordinate site of the first polyoxometalate. In addition, the first metal has a **nitrate** terminal ligand.

IC ICM A62D003-00  
ICS C11D001-00

INCL 588205000

CC 59-2 (Air Pollution and Industrial Hygiene)  
Section cross-reference(s): 4

ST polyoxymetalate **nitrate** copper catalytic oxidn warfare agent

IT 7440-33-7D, Tungsten, heteropoly compds. containing, complexes with iron 59858-44-5 134360-58-0 795308-36-0 796042-78-9  
RL: CAT (Catalyst use); USES (Uses)  
(as **polyoxometalate**; catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)

IT 3251-23-8, Copper (II) **nitrate** 7439-89-6D, Iron, complexes with heteropolytungstates 7440-22-4D, Silver, complexes with heteropolytungstates 7440-45-1D, Cerium, complexes with heteropolytungstates 10108-73-3, Cerium (III) **nitrate** 10141-05-6, Cobalt (II) **nitrate** 10421-48-4, Iron (III) **nitrate** 13093-17-9 13138-45-9, Nickel (II) **nitrate** 13770-18-8, Copper (II) perchlorate 34946-82-2, Copper (II) trifluoromethanesulfonate 38465-60-0, Copper (II) tetrafluoroborate  
RL: CAT (Catalyst use); USES (Uses)  
(catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)

IT 134360-58-0 795308-36-0 796042-78-9  
RL: CAT (Catalyst use); USES (Uses)  
(as **polyoxometalate**; catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)

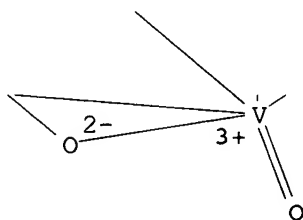
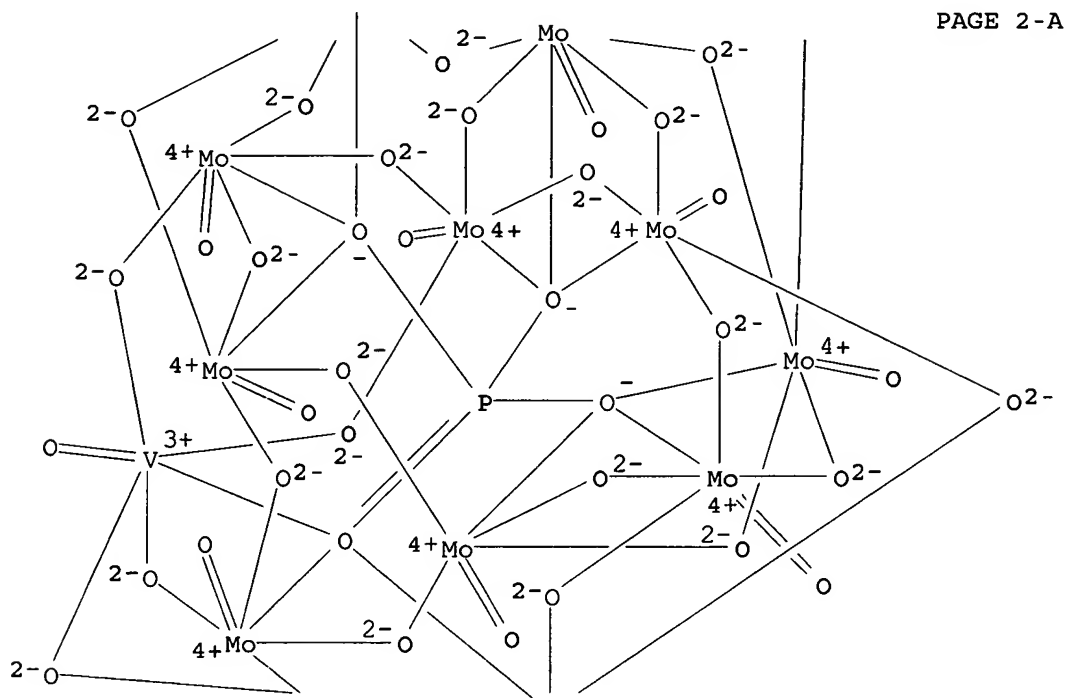
RN 134360-58-0 HCAPLUS

CN 1-Butanaminium, N,N,N-tributyl-, (heptadeca- $\mu$ -oxodecaoxodocamolybdate) hepta- $\mu$ -oxodioxo [ $\mu$ 12-[phosphato(3-)- $\kappa O:\kappa O:\kappa O:\kappa O':\kappa O':\kappa O':\kappa O''::\kappa kappa .O'':\kappa O'':\kappa O'''::\kappa O'''::\kappa O''']]$ ]divanadate(5-) (5:1)  
(9CI) (CA INDEX NAME)

CM 1

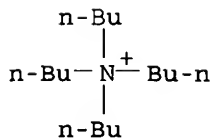
CRN 58071-93-5  
CMF Mo10 O40 P V2  
CCI CCS

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



CM 2

CRN 10549-76-5  
CMF C16 H36 N



RN 795308-36-0 HCAPLUS  
CN 1-Butanaminium, N,N,N-tributyl-, heneicosa-μ-oxononaoxo[μ12-  
[phosphato(3-)-κO:κO:κO:κO':κO':κO':.k  
appa.O':κO':κO':κO':κO':κO']] (tri-

$\mu$ -oxotriferrate)nonatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 741643-46-9

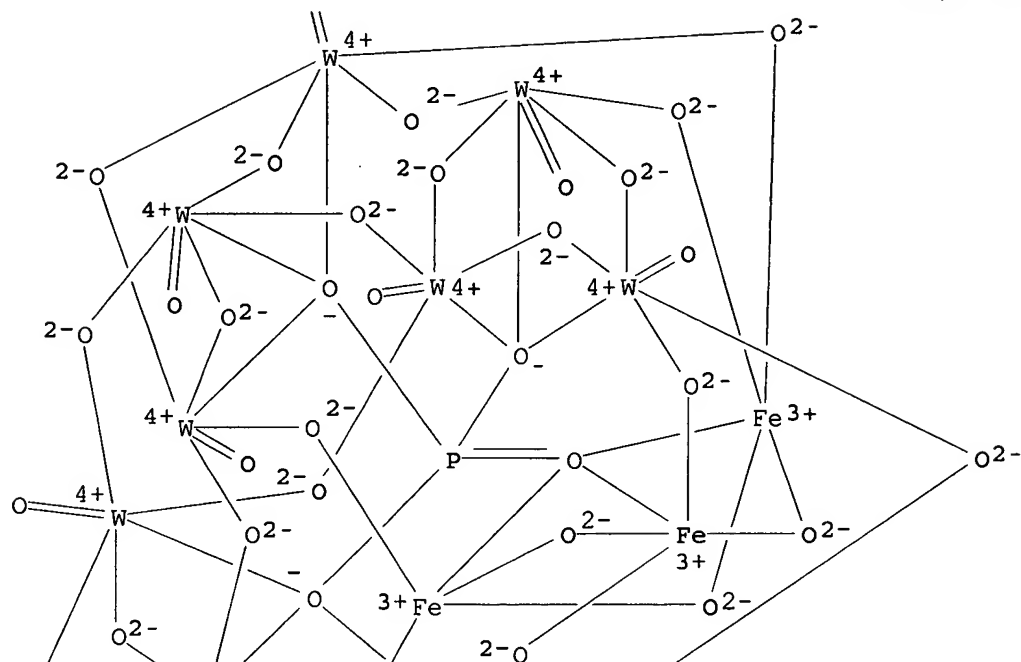
CMF Fe3 O37 P W9

CCI CCS

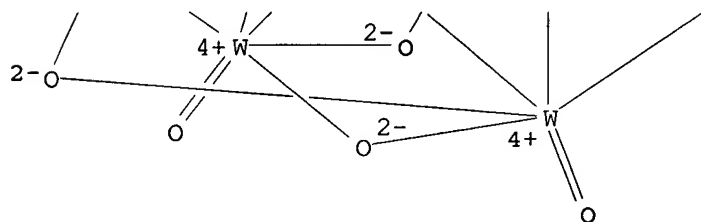
PAGE 1-A

0

PAGE 2-A

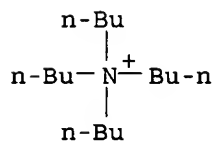


PAGE 3-A



CM 2

CRN 10549-76-5  
CMF C16 H36 N



RN 796042-78-9 HCAPLUS  
CN 1-Butanaminium, N,N,N-tributyl-, triferratedotetraconta-μ-oxooctadeca-oxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO':κO':κO']octadecatungsta



te(9-) (9:1) (9CI) (CA INDEX NAME)

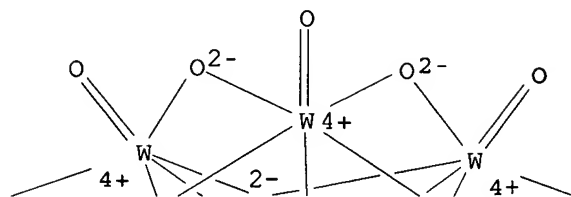
CM 1

CRN 796042-77-8

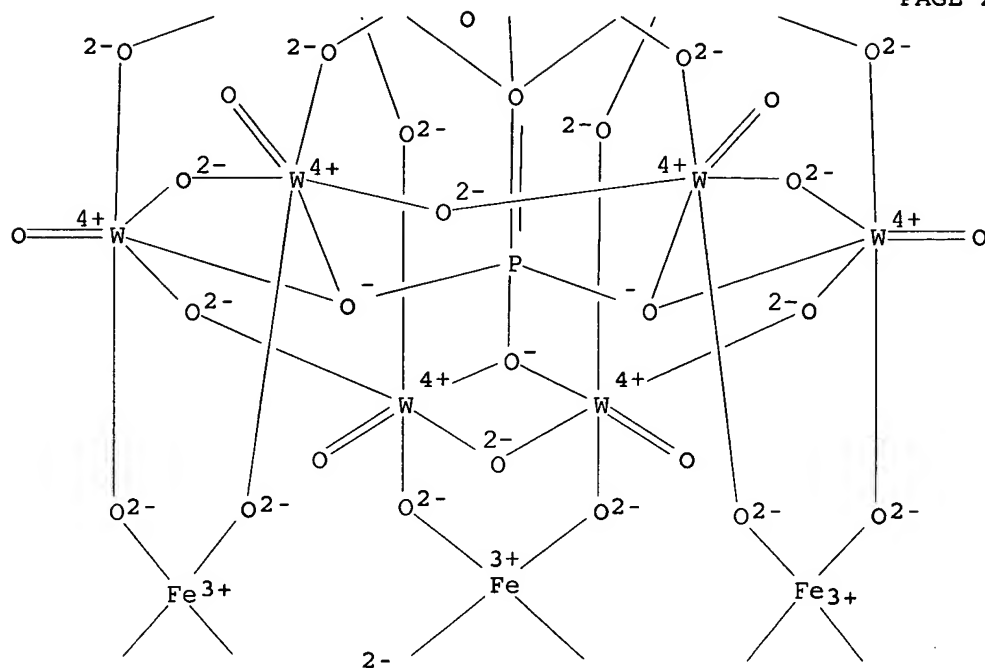
CMF Fe3 O68 P2 W18

CCI CCS

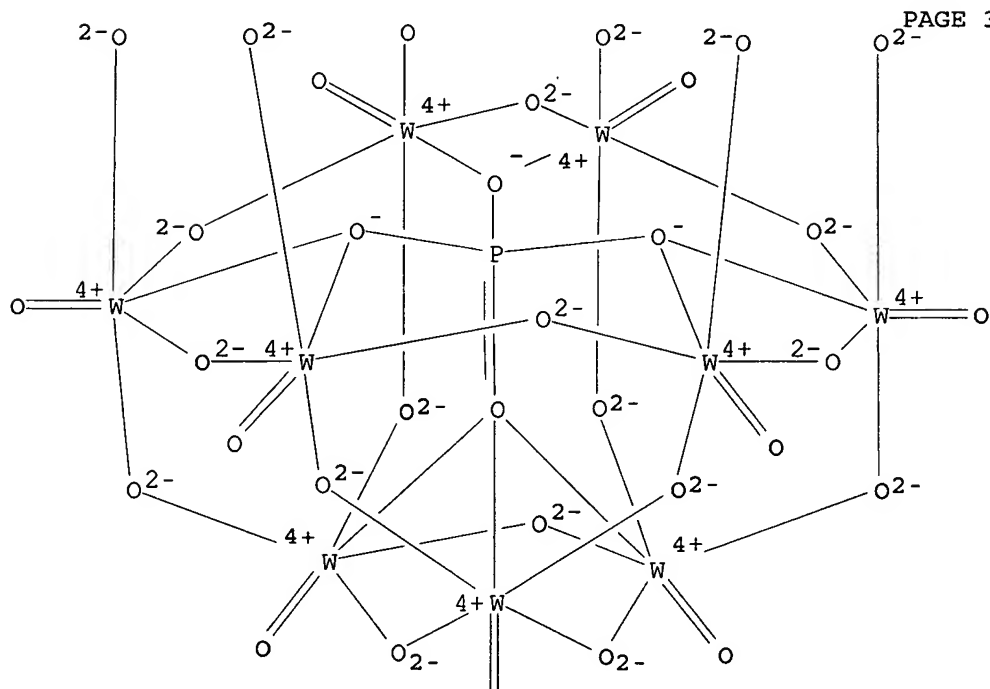
PAGE 1-A



PAGE 2-A



PAGE 3-A



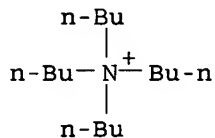
PAGE 4-A

O

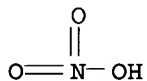
CM 2

CRN 10549-76-5

CMF C16 H36 N

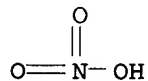


IT 3251-23-8, Copper (II) **nitrate** 10108-73-3,  
Cerium (III) **nitrate** 10141-05-6, Cobalt (II)  
**nitrate** 10421-48-4, Iron (III) **nitrate**  
13093-17-9 13138-45-9, Nickel (II) **nitrate**  
RL: CAT (Catalyst use); USES (Uses)  
(catalytic compns. for removal of contaminants such as warfare agents,  
and materials incorporating these compns.)  
RN 3251-23-8 HCAPLUS  
CN Nitric acid, copper(2+) salt (8CI, 9CI) (CA INDEX NAME)



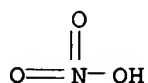
●1/2 Cu(II)

RN 10108-73-3 HCAPLUS  
CN Nitric acid, cerium(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Ce(III)

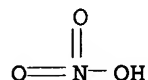
RN 10141-05-6 HCAPLUS  
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



## ●1/2 Co(II).

RN 10421-48-4 HCAPLUS

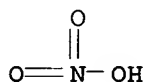
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



## ●1/3 Fe(III)

RN 13093-17-9 HCAPLUS

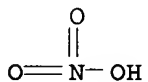
CN Nitric acid, cerium(4+) salt (8CI, 9CI) (CA INDEX NAME)



## ●1/4 Ce(IV)

RN 13138-45-9 HCAPLUS

CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)



## ●1/2 Ni(II)

L32 ANSWER 6 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:804209 HCAPLUS

DN 142:417771

TI Band gap energies calculated from UV-VIS-DRS spectra of some heteropoly compounds catalysts with Keggin structure

AU Sasca, V.; Popa, A.; Selejean, Carmen

CS Chemistry Institute, Romanian Academy, Timisoara, RO-1900, Rom.

SO Annals of West University of Timisoara, Series of Chemistry (2003), 12(3, Pt. 4), 1383-1392

CODEN: AWTCF0; ISSN: 1224-9513

PB Editura Universitatii de Vest

DT Journal

LA English

AB The band gap energies of heteropoly compound derived from H<sub>3</sub>PMo<sub>12</sub>O<sub>40</sub> and H<sub>4</sub>PVM<sub>11</sub>O<sub>40</sub> and their salts with monovalent cation (NH<sub>4</sub>, K, Cs) were calculated from their UV-VIS-DRS spectra. The values of the band gap energy have changed in function of **composition**, especially in function of counter-ion, when the size of the counter-ion decreases, the band gap energy values for higher temperature it could be the compacting of structure through loss of the crystallization water and some ammonium counter-ion decomposition for heteropoly compds. containing ammonium resulting a stronger interaction between Keggin Units. The crystallites size could be in a linear correlation with band gap energy because of nanometric crystallite sizes.

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 73

IT 12026-57-2, H<sub>3</sub>PMo<sub>12</sub>O<sub>40</sub> 12293-15-1 104548-60-9208102-35-6 475678-68-3 615536-30-6 615536-31-7 615536-32-8  
615536-34-0

RL: CAT (Catalyst use); PRP (Properties); USES (Uses)

(band gap energies calculated from UV-VIS-DRS spectra of some  
**heteropoly** compds. catalysts with Keggin structure)IT 12026-57-2, H<sub>3</sub>PMo<sub>12</sub>O<sub>40</sub> 12293-15-1

RL: CAT (Catalyst use); PRP (Properties); USES (Uses)

(band gap energies calculated from UV-VIS-DRS spectra of some  
**heteropoly** compds. catalysts with Keggin structure)

RN 12026-57-2 HCAPLUS

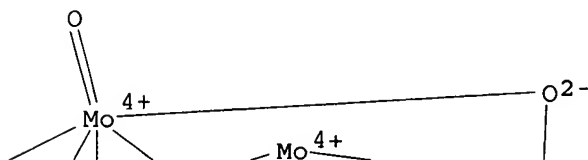
CN Molybdate(3-), tetracosamolybdoxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':κappa

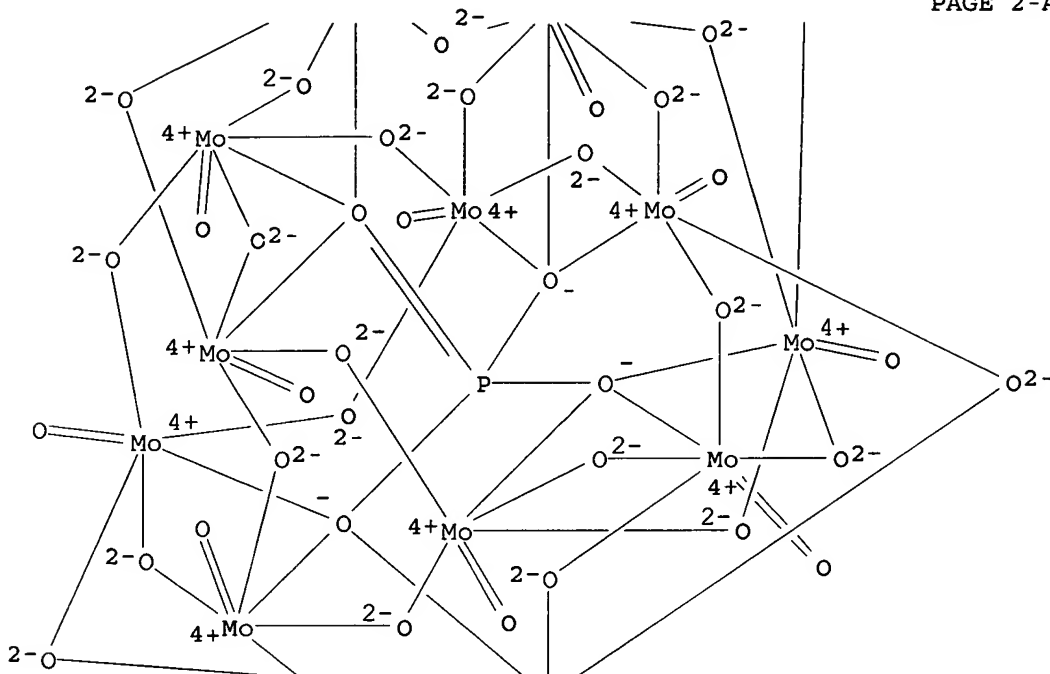
.O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen

(9CI) (CA INDEX NAME)

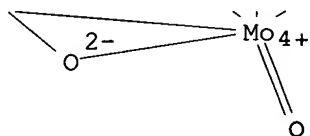
PAGE 1-A



PAGE 2-A



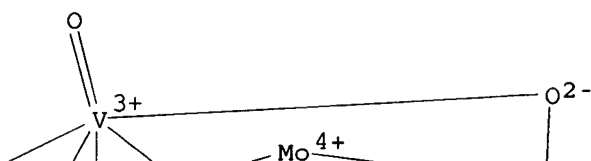
PAGE 3-A



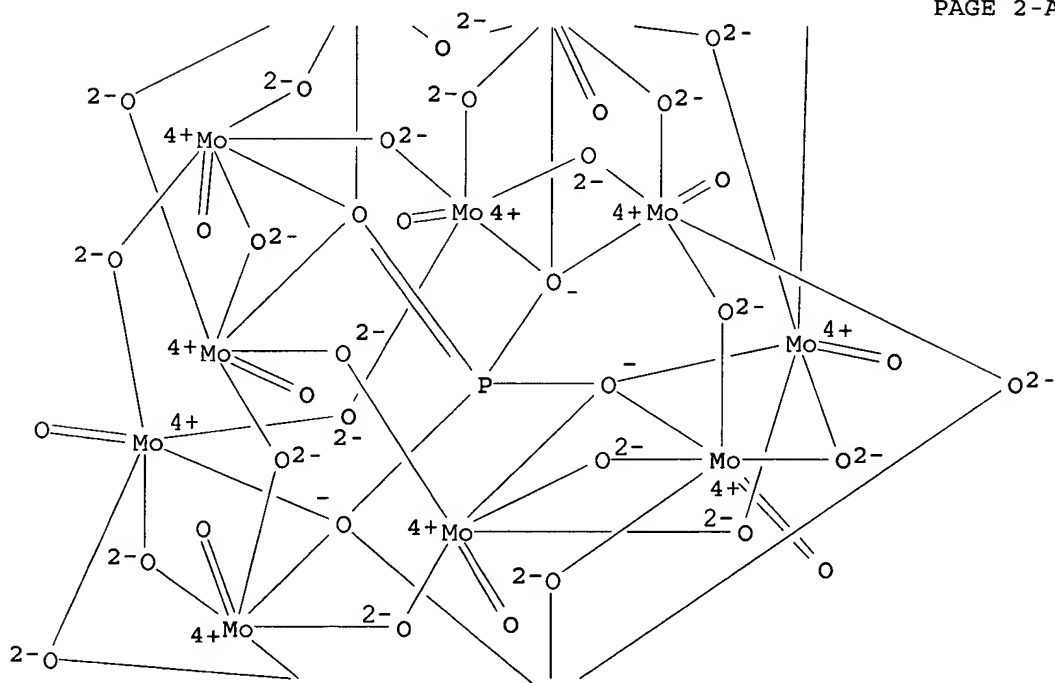
● 3 H<sup>+</sup>

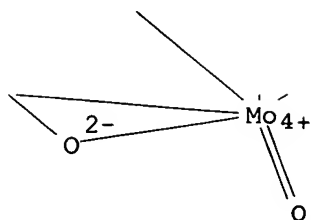
```
RN      12293-15-1   HCAPLUS
CN      Vanadate(4-), (eicosa-μ-oxoundecaοxoundecamolybdate)tetra-μ-
        οxoοxο[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO':κO'':κO'':κO'':κO'':κO'':κapp
        a.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)
```

PAGE 1-A



PAGE 2-A





PAGE 3-A

● 4 H<sup>+</sup>

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 7 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:609973 HCAPLUS

DN 141:142184

TI Catalyst **composition** comprising a heteropoly acid, zinc, and a support component for alkylating at least one isoparaffin with at least one C5 olefin

IN Randolph, Bruce B.

PA Phillips Petroleum Company, USA

SO U.S. Pat. Appl. Publ., 23 pp.

CODEN: USXXCO

DT Patent

LA English

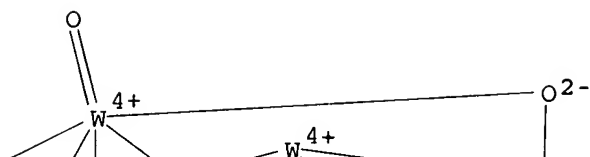
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004147795	A1	20040729	US 2003-350716	20030124 <--
PRAI	US 2003-350716		20030124 <--		
AB	An alkylation process of contacting at least one isoparaffin and at least one C5 olefin in the presence of a catalyst <b>composition</b> under conversion conditions to provide for converting the at least one isoparaffin and the at least one C5 olefin is provided. The catalyst <b>composition</b> contains a heteropoly acid, zinc, and a support component.				
IC	ICM C07C005-23				
	ICS B01J027-19				
INCL	585734000; 502253000; 502208000; 502210000; 502211000				
CC	45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes) Section cross-reference(s): 23, 48, 67				
IT	Alkenes, reactions RL: RCT (Reactant); RACT (Reactant or reagent) (C5; catalyst <b>composition</b> comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)				
IT	Calcination Drying (catalyst <b>composition</b> comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)				
IT	Zeolites (synthetic), uses RL: CAT (Catalyst use); USES (Uses) (catalyst <b>composition</b> comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)				

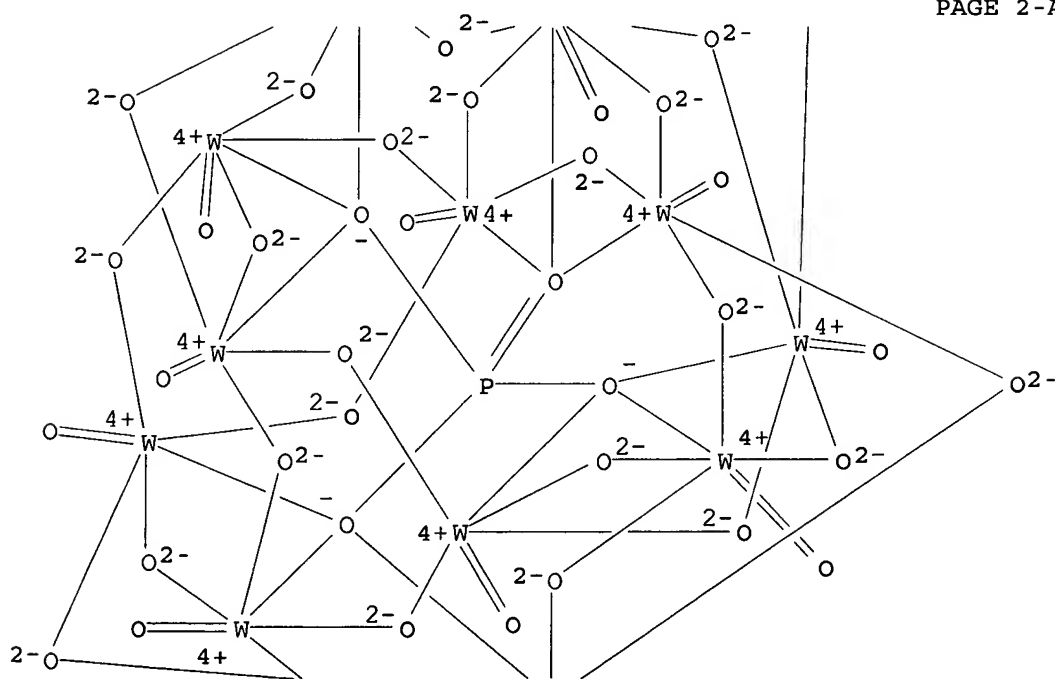


- IT Isoalkanes  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
- IT Alkylation  
 Alkylation catalysts  
 (**composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
- IT Heteropoly acids  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (**composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
- IT 1343-93-7, 12-Tungstophosphoric acid 7440-66-6, Zinc, uses  
 12026-57-2, 12-Molybdophosphoric acid 12027-38-2,  
 12-Tungstosilicic acid  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
- IT 75-28-5, Isobutane 75-83-2, 2,2-Dimethylbutane 78-78-4, Isopentane  
 79-29-8, 2,3-Dimethylbutane 96-14-0, 3-Methylpentane 107-83-5,  
 2-Methylpentane 108-08-7, 2,4-Dimethylpentane 109-67-1, 1-Pentene  
 464-06-2, 2,2,3-Trimethylbutane 513-35-9, 2-Methyl-2-butene 562-49-2,  
 3,3-Dimethylpentane 563-46-2, 2-Methyl-1-butene 590-35-2,  
 2,2-Dimethylpentane 591-76-4, 2-Methylhexane 617-78-7, 3-Ethylpentane  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
- IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
 12-Molybdophosphoric acid 12027-38-2, 12-Tungstosilicic acid  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
- RN 1343-93-7 HCAPLUS  
 CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

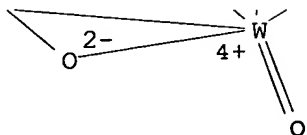
PAGE 1-A



PAGE 2-A

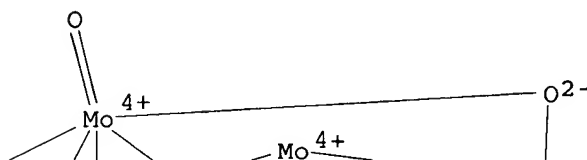


PAGE 3-A

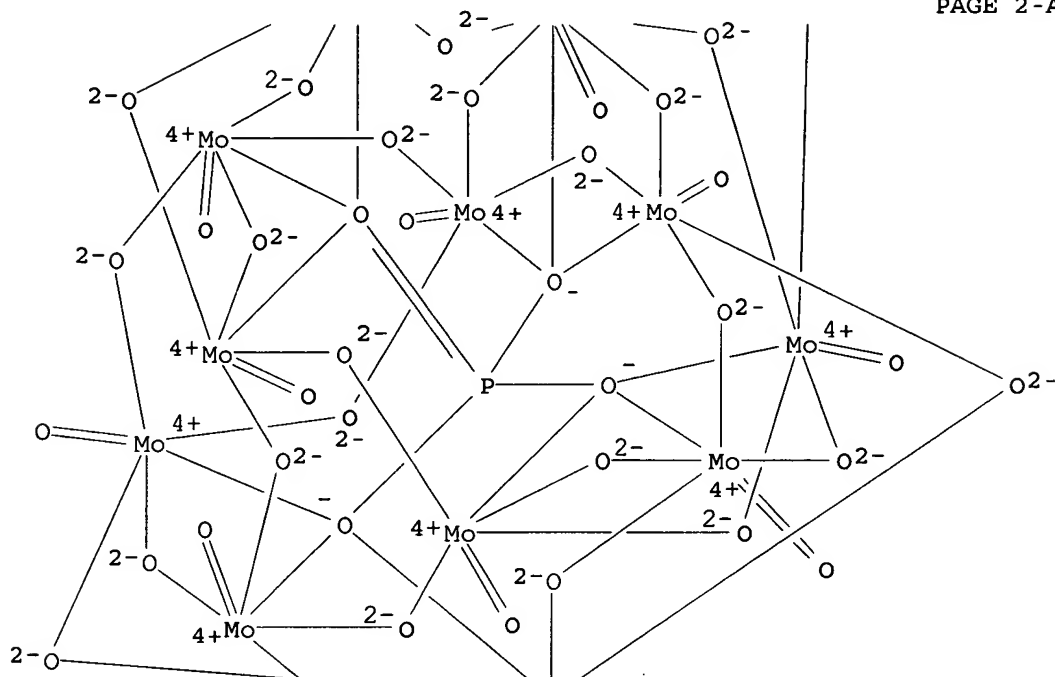
● 3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosam-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

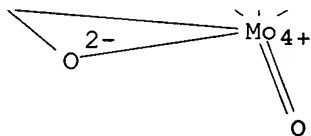
PAGE 1-A



PAGE 2-A



PAGE 3-A



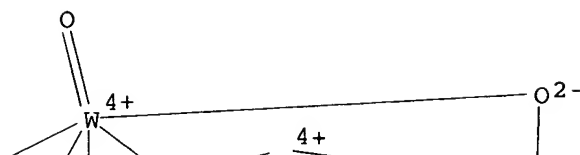
● 3 H<sup>+</sup>

```

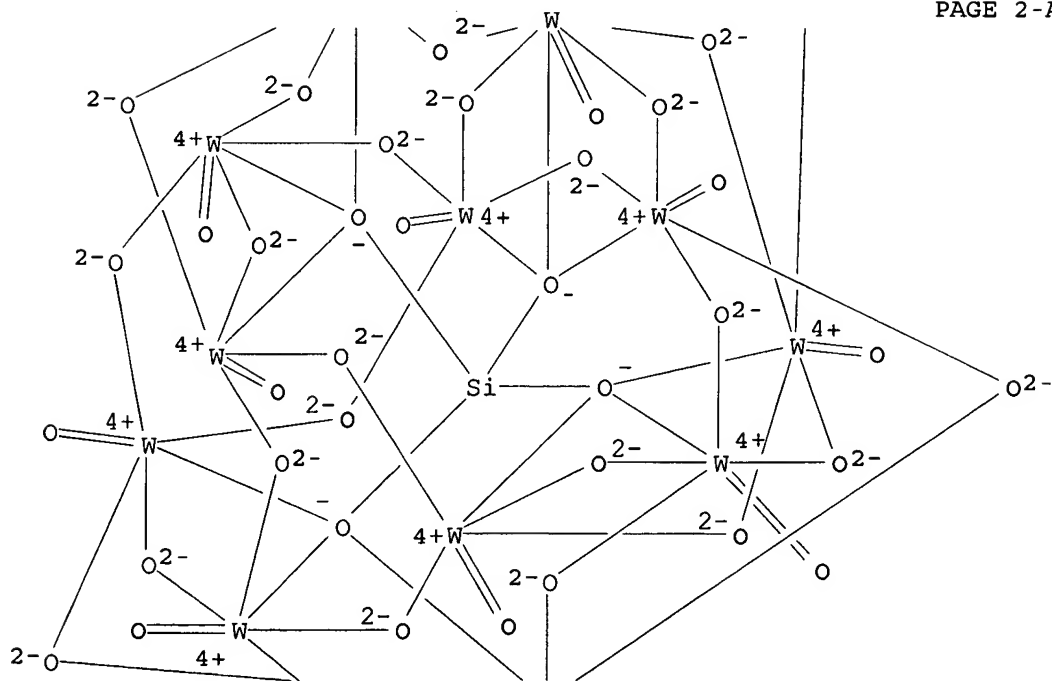
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [mu12-[orthosilicato(4-)-kO:kO:kO:.kapp
a.O':kO':kO':kO'':kO'':kO'':kO'':.kap
pa.O'':kO'']]tetracosam-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

```

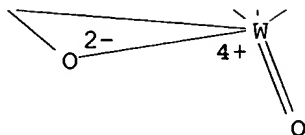
PAGE 1-A



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

L32 ANSWER 8 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:510391 HCAPLUS

DN 141:77472

TI Hetero-polyoxometalate anion as catalyst for liquid phase reactions

IN Yonehara, Hiroshi; Sumida, Yasutaka; Mizuno, Tetsutaka

PA Nippon Shokubai Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 30 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004174486	A2	20040624	JP 2003-349996	20031008 <--
PRAI	JP 2002-326690	A	20021111	<--	

AB The invention refers to a catalyst for liquid phase reactions comprising a hetero-polyoxometalate anion wherein the heteroatom is a transition metal, and the poly atom is Wand/or Mo and a element from groups 3 - 16 in the periodic table.

IC ICM B01J031-34

ICS B01J035-02; C07B061-00; C07C027-12; C07C029-50; C07C033-20;  
C07C035-08; C07C035-20; C07C045-33; C07C047-542; C07C049-403;  
C07C049-607; C07C051-265; C07C063-04; C07D301-06; C07D303-04;  
C07D303-06; C07D493-04

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

IT 1643-19-2, Tetrabutylammonium bromide 10049-08-8, Ruthenium chloride

10377-66-9, Manganese nitrate 10421-48-4, Ferric

nitrate 13548-38-4, Chromium nitrate Cr(NO<sub>3</sub>)<sub>3</sub>

27774-13-6 167103-95-9

RL: CAT (Catalyst use); DEV (Device component use); USES (Uses)

(hetero polyoxometalate anion as catalyst for liquid phase  
reactions from)

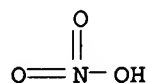
IT 10421-48-4, Ferric nitrate 167103-95-9

RL: CAT (Catalyst use); DEV (Device component use); USES (Uses)

(hetero polyoxometalate anion as catalyst for liquid phase  
reactions from)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



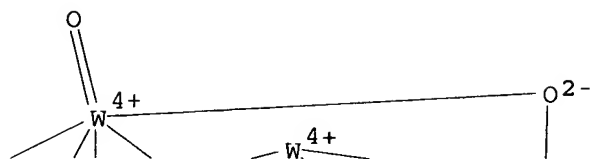
●1/3 Fe(III)

RN 167103-95-9 HCAPLUS  
 CN Tungstate(9-), cobaltateeicosa-μ-oxo-μ3-oxotri-μ4-oxopentadeca-oxoundeca-, nonapotassium (9CI) (CA INDEX NAME)

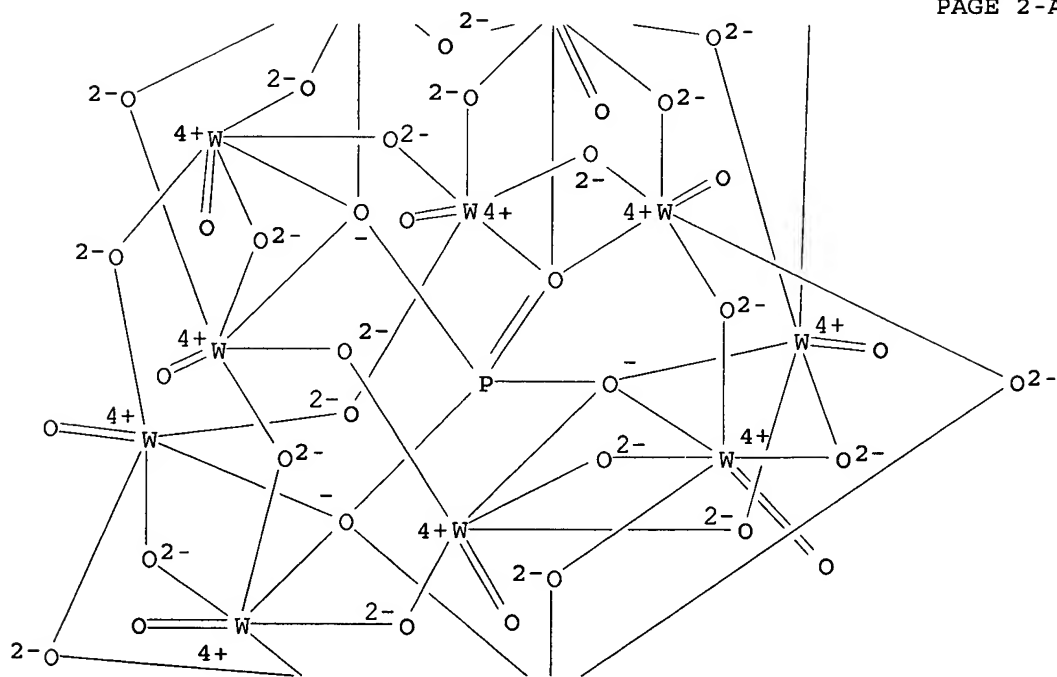
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L32 ANSWER 9 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2004:475756 HCAPLUS  
 DN 142:200428  
 TI Catalytic oxidative condensation of methane over supported catalysts based on tungsten heteropoly compounds  
 AU Savel'eva, G. A.; Dusumov, K.; Shingisbaev, B. M.; Tungatarova, S. A.; Esensarin, M. S.  
 CS Inst. Org. Kataliza Elektrokhim, MON Kaz., Almaty, Kazakhstan  
 SO Goren'ie i Plazmokhimiya (2003), 1(3), 265-277  
 CODEN: GPOLB5; ISSN: 1683-3902  
 PB Izdatel'stvo "Kazak Universiteti"  
 DT Journal  
 LA Russian  
 AB Catalyst **composition** and process parameters are optimized for natural gas (methane) oxidative coupling over aluminosilicate- and zeolite-supported tungstosilicate and tungstophosphate catalysts. Effect of cations in tungstate catalyst on the activity and selectivity was studied with the intent to maximize ethylene formation. It was established that 5-15% catalysts on the base of [PW12]-HPC over Si-containing carriers have optimal properties for the forming of ethylene from methane. Water vapor addition to the reaction mixture pos. affects product formation and thermal stability of the catalysts.  
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
 Section cross-reference(s): 35, 67  
 IT 1343-93-7, Tungstophosphoric acid (H3PW12O40) 12027-38-2  
 , Tungstosilicic acid (H4SiW12O40)  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (catalytic oxidative condensation of methane over supported catalysts based on tungsten **heteropoly** compds.)  
 IT 1343-93-7, Tungstophosphoric acid (H3PW12O40) 12027-38-2  
 , Tungstosilicic acid (H4SiW12O40)  
 RL: **CAT (Catalyst use)**; USES (Uses)  
 (catalytic oxidative condensation of methane over supported catalysts based on tungsten **heteropoly** compds.)  
 RN 1343-93-7 HCAPLUS  
 CN Tungstate(3-), tetracosa-μ-oxododecaoxo [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



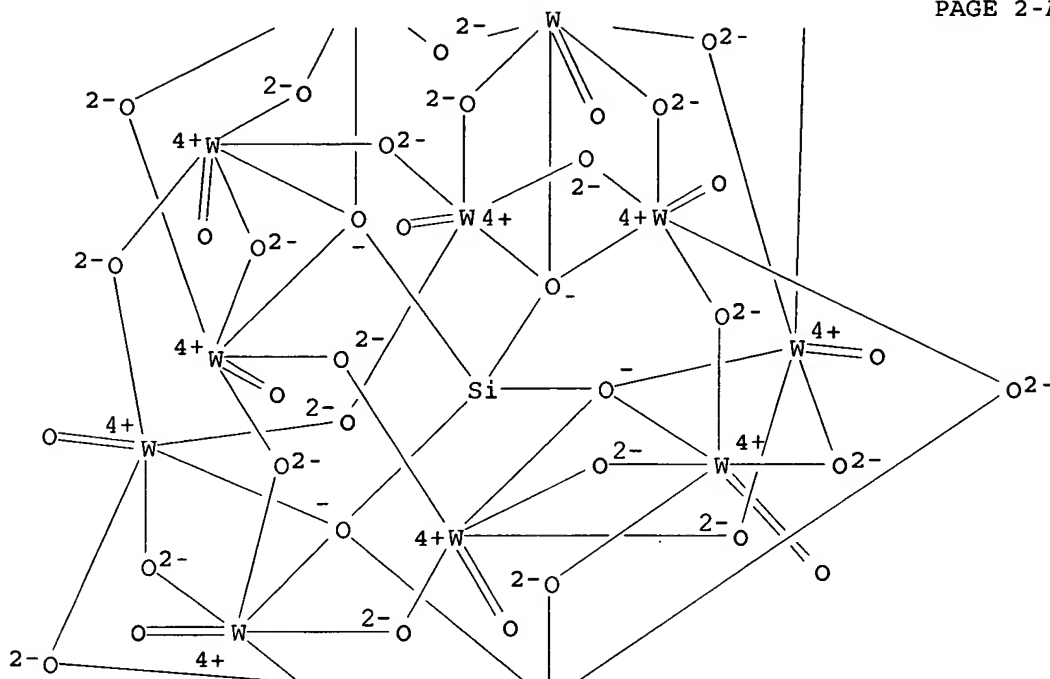
PAGE 2-A



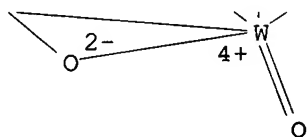




PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

L32 ANSWER 10 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2004:340747 HCAPLUS  
 DN 141:79214  
 TI Comparative Study of Homogeneous and Heterogeneous Photocatalytic Redox  
 Reactions: PW12O40<sup>3-</sup> vs TiO<sub>2</sub>  
 AU Kim, Soonhyun; Park, Hyunwoong; Choi, Wonyong  
 CS School of Environmental Science and Engineering and Department of  
 Chemistry, Pohang University of Science and Technology, Pohang, 790-784,  
 S. Korea  
 SO Journal of Physical Chemistry B (2004), 108(20), 6402-6411  
 CODEN: JPCBFK; ISSN: 1520-6106  
 PB American Chemical Society  
 DT Journal  
 LA English  
 AB Polyoxometalates (POMs) as a homogeneous photocatalyst and semiconductor  
 oxide as a heterogeneous photocatalyst share many aspects of similarity in

their operating mechanisms. This study systematically compares various photocatalytic oxidation and reduction reactions of PW12O403- (a POM) and TiO2 in water to demonstrate that the two photocatalysts are very different in many ways. Both POM and TiO2 can photooxidize various organic compds. with comparable rates, but the POM-mediated mineralization is markedly slower than the mineralization with TiO2 under the exptl. conditions employed in this study. Kinetic studies using tert-Bu alc. as an OH radical scavenger suggest that OH radicals are the sole dominant photooxidant in POM-mediated degrdns. regardless of the kind of substrates tested, whereas both OH radicals and direct hole transfers take part in TiO2 photocatalysis. POM immobilization on silica support and surface fluorination of TiO2 significantly modified the kinetics and intermediate distribution. POM-mediated photoreductive dechlorination of CCl4 and trichloroacetate was negligible, whereas the dechlorination with TiO2 was markedly faster. The rate of electron transfer from POM- to reducible substrates seems to be significantly slower than the rate of conduction band electron transfer on TiO2 mainly due to the strong electron affinity of POM. The effects of H2O2 addition on photocatalytic reactivity are also very different between POM and TiO2. Detailed kinetic and mechanistic comparisons between PW12O403- and TiO2 photocatalysts are presented and discussed to understand the similarities and differences.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 59, 60, 78

IT 12027-38-2, Dodecatungstosilicic acid (H4SiW12O40)

RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)

(comparison of kinetics and mechanisms of photocatalytic reactions of polyoxometalates and TiO2 in water)

IT 12027-38-2, Dodecatungstosilicic acid (H4SiW12O40)

RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)

(comparison of kinetics and mechanisms of photocatalytic reactions of polyoxometalates and TiO2 in water)

RN 12027-38-2 HCAPLUS

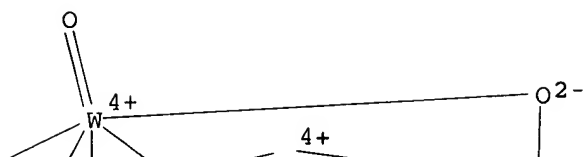
CN Tungstate(4-), [ $\mu_{12}$ -[orthosilicato(4-)- $\kappa O:\kappa O:\kappa O$ :.kapp

a.O': $\kappa O$ ': $\kappa O$ ': $\kappa O$ ': $\kappa O$ ': $\kappa O$ ': $\kappa O$ ': $\kappa O$ ':.kap

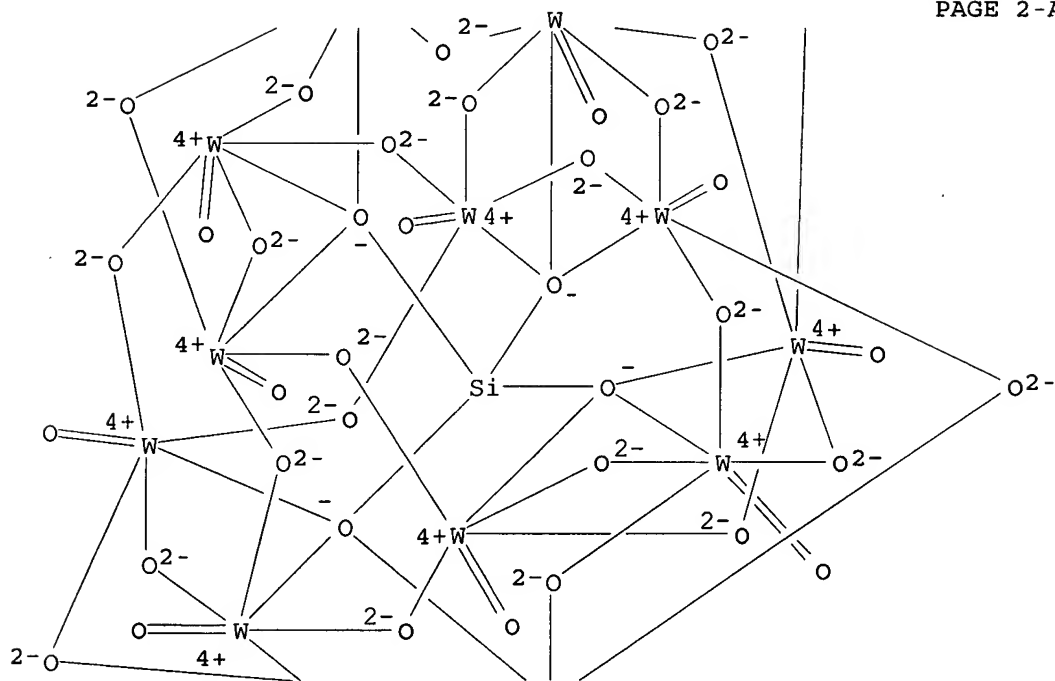
pa.O''': $\kappa O$ ''']tetracosam-oxododecaoxododeca-, tetrahydrogen

(9CI) (CA INDEX NAME)

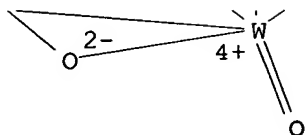
PAGE 1-A



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 11 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:249291 HCAPLUS

DN 140:270552

TI Catalytic process for manufacturing of mercaptans by hydrogen  
sulfide-cleavage of thioether in the presence of H<sub>2</sub>

IN Fremy, Georges; Essayem, Nadine; Lacroix, Michel; Zausa, Elodie

PA Atofina, Fr.

SO Fr. Demande, 15 pp.

CODEN: FRXXBL

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2844726	A1	20040326	FR 2002-11922	20020925 <--
	FR 2844726	B1	20041203		
	CA 2499632	AA	20040408	CA 2003-2499632	20030923 <--
	WO 2004029022	A2	20040408	WO 2003-FR2790	20030923 <--
	WO 2004029022	A3	20040506		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				
	LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,				
	PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,				
	TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				
	KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,				
	FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,				
	BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP	1542795	A2	20050622	EP 2003-773807	20030923 <--
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP	2006500417	T2	20060105	JP 2004-539126	20030923 <--
US	2006025633	A1	20060202	US 2005-528861	20050323 <--
PRAI	FR 2002-11922	A	20020925	<--	
	WO 2003-FR2790	W	20030923	<--	

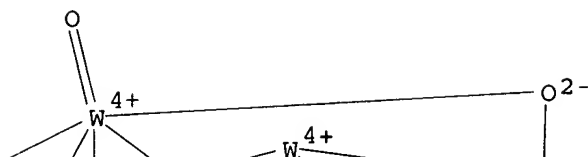
OS MARPAT 140:270552

AB The invention is directed to a catalytic process for preparation mercaptans RSR' from thioether and hydrogen sulfide, in the presence of hydrogen and of a catalytic **composition** including a strong acid, in particular a heteropolyacids, and at least a Group VIII metal [R, R' = independently cyclo/alkyl]. The advantages include lower reaction temps., high yield and purity of mercaptans, and high activity of the catalyst in time. Thus, mixing an aqueous solution of SiO<sub>2</sub> with PdCl<sub>2</sub> and H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub> (HPW) gave a

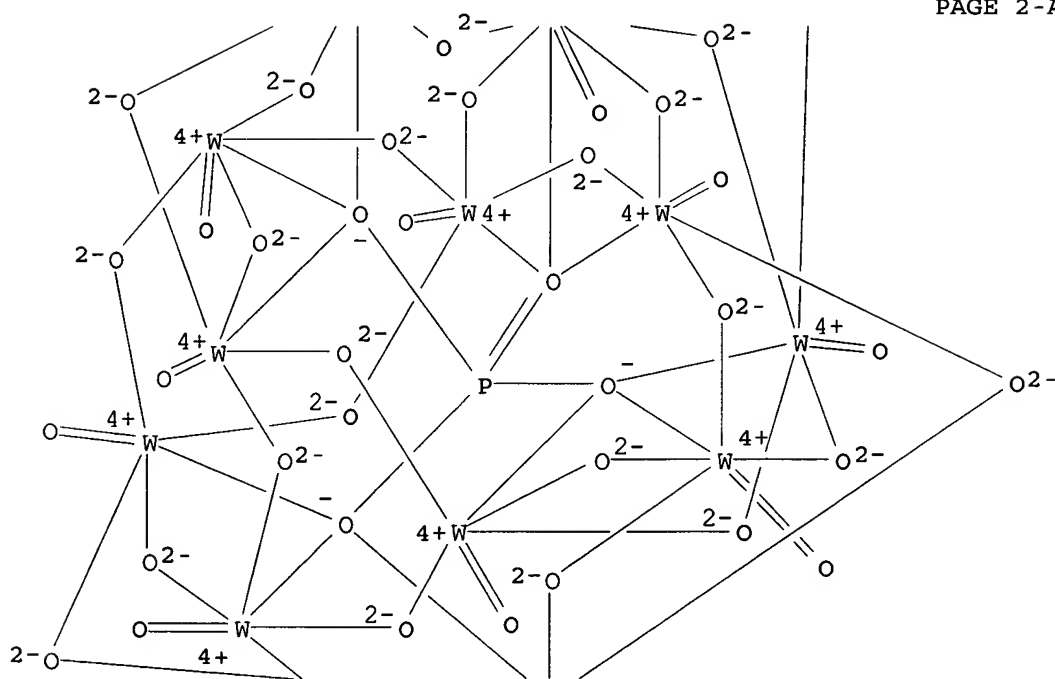
- catalytic **composition** consisting of 59% SiO<sub>2</sub>, 1% Pd, and 40% HPW. Et mercaptan was prepared, in 49.3% yield, by hydrogen sulfide-cleavage of di-Et sulfide in the presence of H<sub>2</sub> and the above catalytic **compn** . at 15 bar and 235°.
- IC ICM B01J027-182  
ICS B01J027-186; B01J023-30; B01J021-18; C07C319-04
- CC 23-7 (Aliphatic Compounds)  
Section cross-reference(s): 45, 67
- IT Group VIII elements  
Heteropoly acids  
RL: CAT (Catalyst use); USES (Uses)  
(catalytic **composition**; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT Catalysts  
(catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT Zeolites (synthetic), uses  
RL: CAT (Catalyst use); USES (Uses)  
(catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT Resins  
RL: CAT (Catalyst use); USES (Uses)  
(cationic; catalyst **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT Bond cleavage  
Bond cleavage catalysts  
Catalysis  
Solid phase synthesis  
(preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT Thiols, preparation  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(products; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT Thioethers  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(starting materials; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT 7647-10-1, Palladium chloride  
RL: RGT (Reagent); RACT (Reactant or reagent)  
(catalyst precursor; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO<sub>2</sub>)
- IT 1314-23-4, Zirconium dioxide, uses 1343-93-7D, potassium, rubidium, cesium, ammonium salts 1344-28-1, Alumina, uses 7439-88-5, Iridium, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-44-0, Carbon, uses 7440-48-4, Cobalt, uses 7631-86-9, Silica, uses 12027-38-2D, potassium, rubidium, cesium, ammonium salts 12027-43-9 12411-74-4D, potassium, rubidium, cesium, ammonium salts 12501-23-4 13463-67-7, Titanium dioxide, uses 14644-61-2 39290-95-4, Zirconium tungstate 84973-55-7  
RL: CAT (Catalyst use); USES (Uses)

- (catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- IT 75-08-1P, Ethyl mercaptan  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (mercaptan product; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- IT 7440-18-8, Ruthenium, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- IT 7783-06-4, Hydrogen sulfide, reactions  
 RL: RCT (Reactant); RGT (Reagent); RACT (Reactant or reagent)  
 (preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- IT 1333-74-0, Hydrogen, reactions  
 RL: RGT (Reagent); RACT (Reactant or reagent)  
 (preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- IT 352-93-2, Diethylsulfide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (starting material; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- IT 1343-93-7D, potassium, rubidium, cesium, ammonium salts  
 12027-38-2D, potassium, rubidium, cesium, ammonium salts  
 12411-74-4D, potassium, rubidium, cesium, ammonium salts  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H<sub>2</sub>, and a catalyst **composition**, in particular **heteropolyacids/Pd/SiO<sub>2</sub>**)
- RN 1343-93-7 HCAPLUS
- CN Tungstate(3-), tetracosam-μ-oxododecaoxo [μ<sub>12</sub>-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

PAGE 1-A



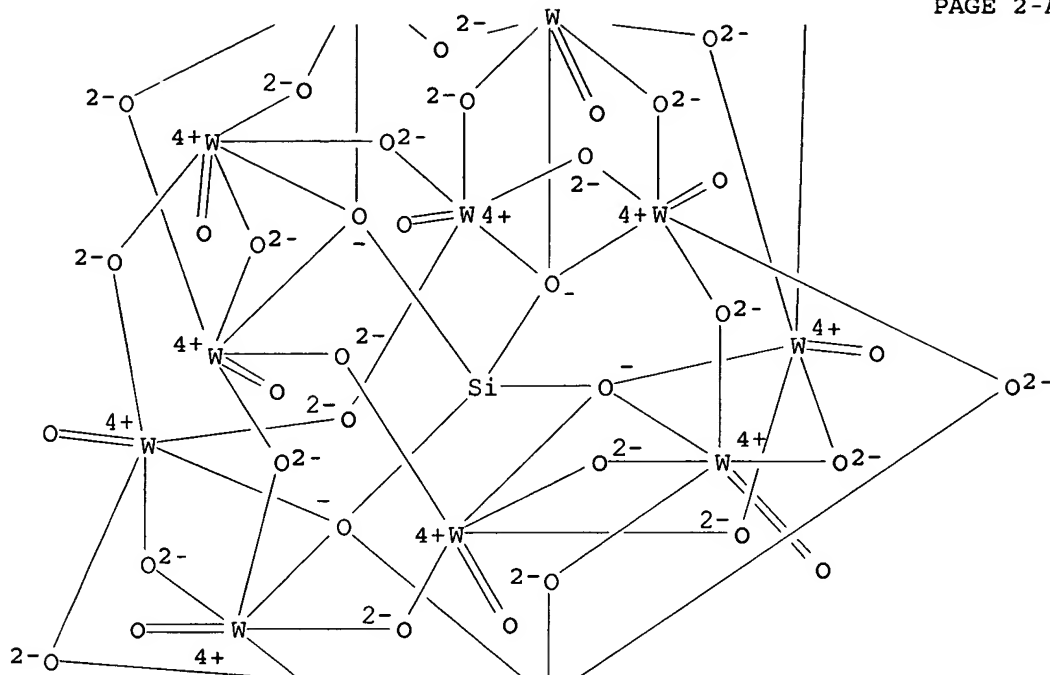
PAGE 2-A



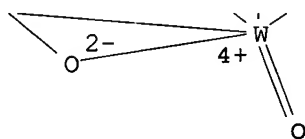




PAGE 2-A



PAGE 3-A



●<sub>4</sub> H<sup>+</sup>

RN 12411-74-4 HCAPLUS  
CN Tungstate(6-), hexatriaconta- $\mu$ -oxooctadeca-oxobis[ $\mu$ 9-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO'':κO'':.kapp  
a.O'':κO'']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

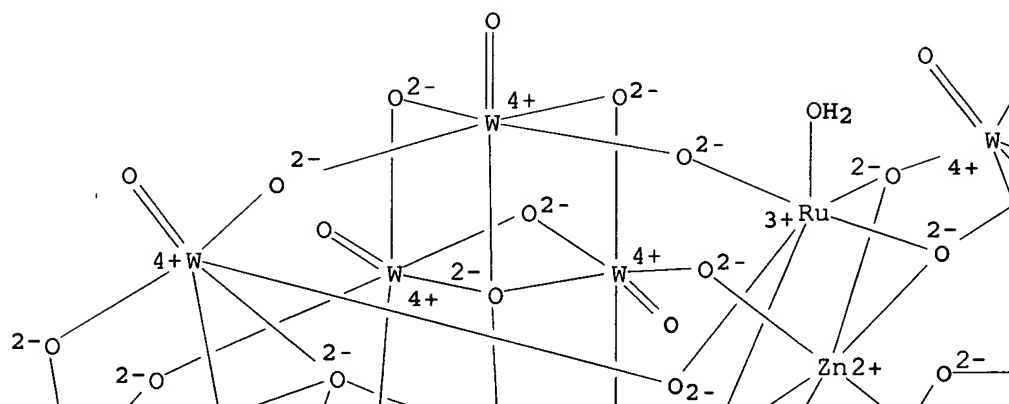
RE.CNT 4        THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 12 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2004:200346 HCAPLUS  
DN 140:238000  
TI Manufacture of heteropoly acid salts for catalysts  
IN Kodama, Tamotsu; Niina, Hideaki  
PA Asahi Kasei Chemical Corporation, Japan  
SO Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF

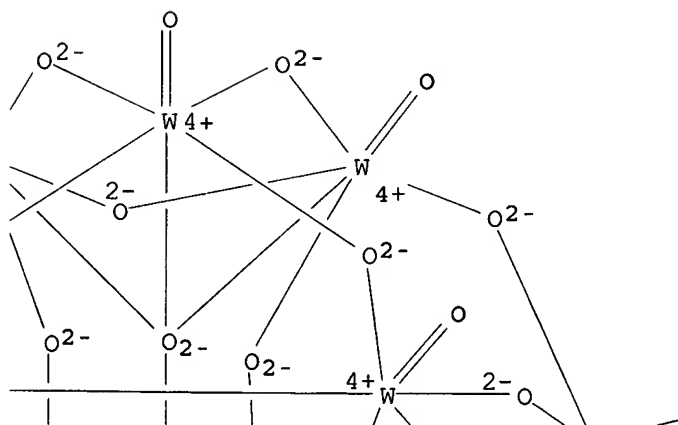
DT Patent  
 LA Japanese  
 FAN.CNT 1

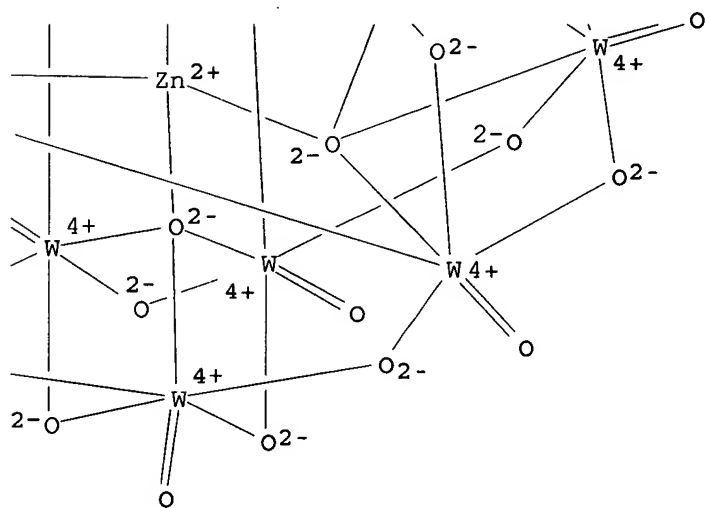
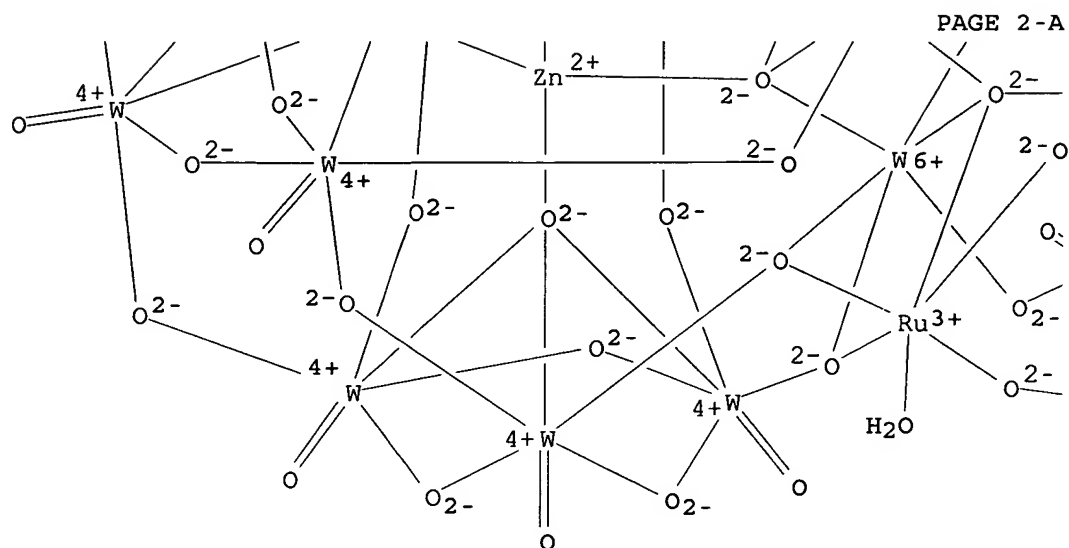
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004075633	A2	20040311	JP 2002-240441	20020821 <--
PRAI	JP 2002-240441		20020821	<--	
AB	The claimed process comprises mixing sandwich-type heteropoly acid salts AaX19Y5O68 (A = monovalent metal cation, divalent metal cation, and/or NH4+; a = 4.5-12; X = W, Mo, and/or V; Y = Zn and/or Co) with complexes of transition metals belonging to Group 7-12 and 5th or 6th period elements in an organic solvent at 60-180° to give the title heteropoly acid salts A'aX19Y(5-b)ZbO68 (A' = monovalent metal cation, divalent metal cation, and/or NH4+; Z = transition metals belonging to Group 7-12 and 5th or 6th period elements). The process provides high production yield and reproducibility and the resulting heteropoly acid salts are especially suitable for oxidation catalysts.				
IC	ICM C07C211-63				
	ICS B01J031-02; C07C209-68				
CC	49-7 (Industrial Inorganic Chemicals) Section cross-reference(s): 67				
IT	<b>667915-85-7P 667938-85-4P</b> RL: CAT (Catalyst use); IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (preparation and reaction of; manufacture of <b>heteropoly acid salts</b> containing platinum group metal for catalysts)				
IT	127-09-3, Sodium acetate 5137-55-3, Trioctylmethylammonium chloride 7447-40-7, Potassium chloride, reactions 7779-88-6, Zinc <b>nitrate</b> 13472-45-2, Sodium tungstate 41290-68-0 RL: RCT (Reactant); RACT (Reactant or reagent) (reaction of; manufacture of heteropoly acid salts containing platinum group metal for catalysts)				
IT	<b>667915-85-7P 667938-85-4P</b> RL: CAT (Catalyst use); IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (preparation and reaction of; manufacture of <b>heteropoly acid salts</b> containing platinum group metal for catalysts)				
RN	667915-85-7 HCAPLUS				
CN	1-Octanaminium, N-methyl-N,N-dioctyl-, bis(aquaruthenate)octatriaconta-μ-oxotetra-μ3-oxoocta-μ4-oxooctadeca-oxotrizincatenonadecatungstate(10-) (10:1) (9CI) (CA INDEX NAME)				
CM	1				
CRN	502968-07-2				
CMF	H4 O70 Ru2 W19 Zn3				
CCI	CCS				

PAGE 1-A



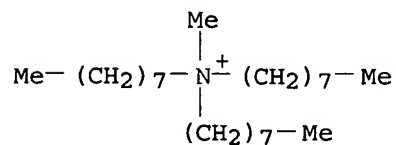
PAGE 1-B





CM 2

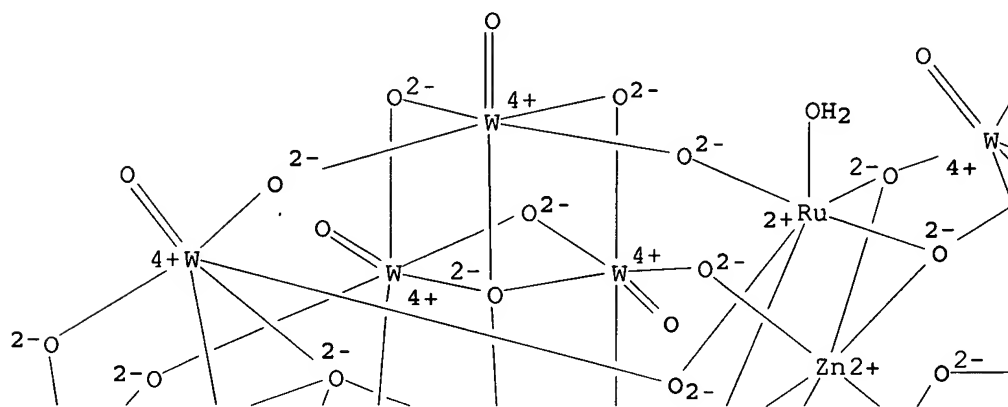
CRN 22061-11-6  
CMF C25 H54 N



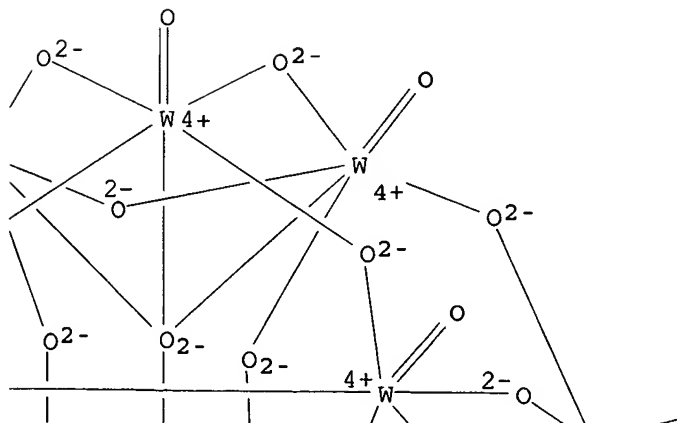
RN 667938-85-4 HCAPLUS

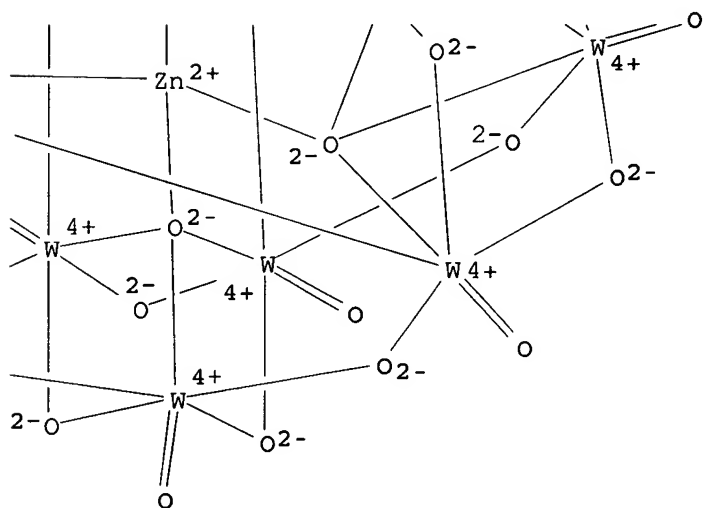
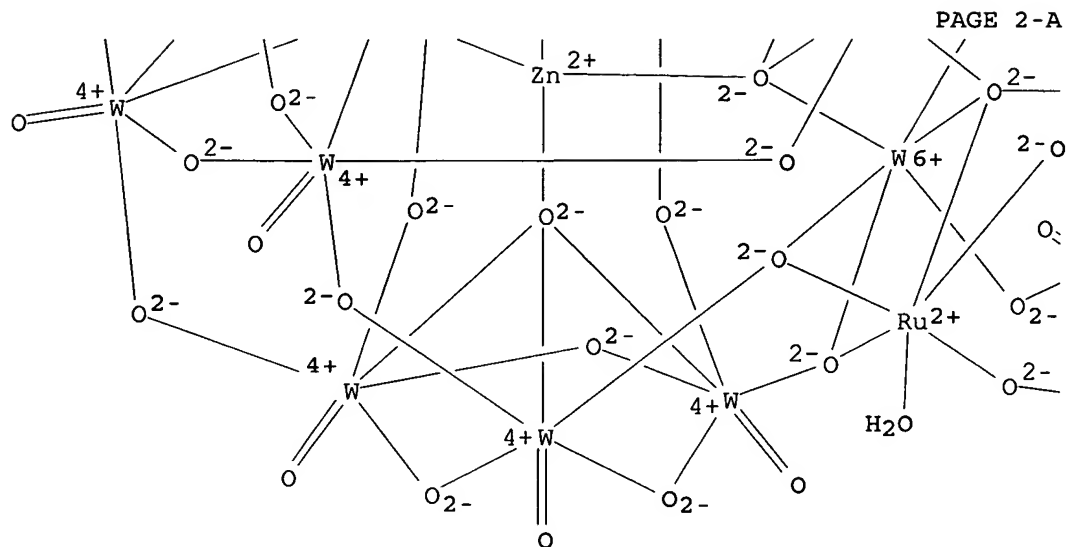
CN Tungstate(12-), bis(aquaruthenate)octatriaconta- $\mu$ -oxotetra- $\mu$ 3-oxoocta- $\mu$ 4-oxooctadeca-oxotrizincatenonadeca-, dodecasodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B





● 12 Na<sup>+</sup>

L32 ANSWER 13 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:46285 HCAPLUS

DN 140:204249

TI Photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type polyoxometalates

AU Jiang, Chunjie; Guo, Yihang; Hu, Changwen; Wang, Chungang; Li, Danfeng

CS Faculty of Chemistry, Northeast Normal University, Changchun, 130024, Peop. Rep. China

SO Materials Research Bulletin (2004), 39(2), 251-261

CODEN: MRBUAC; ISSN: 0025-5408

PB Elsevier Science Ltd.

DT Journal

LA English

AB Zirconia-supported Ti-substituted Keggin-type polyoxometalates,  $\text{Li}_5\text{PW}_{11}\text{TiO}_{40}/\text{ZrO}_2$  ( $\text{PW}_{11}\text{Ti}/\text{ZrO}_2$ ) and  $\text{K}_7\text{PW}_{10}\text{Ti}_2\text{O}_{40}/\text{ZrO}_2$  ( $\text{PW}_{10}\text{Ti}_2/\text{ZrO}_2$ ), were prepared by incorporating  $\text{PW}_{11}\text{Ti}$  and  $\text{PW}_{10}\text{Ti}_2$  cluster into a zirconia matrix via a sol-gel technique. These insol. and readily separable composites were characterized by DR-UV (DR: diffuse reflectance) and FT-IR spectra,  $^{31}\text{P}$  MAS NMR, ICP-AES, and nitrogen adsorption determination, indicating that the clusters were chemical attached to the zirconia supports, and the primary Keggin structure remained intact. The photocatalytic activity of the supported  $\text{PW}_{11}\text{Ti}$  and  $\text{PW}_{10}\text{Ti}_2$  was tested via degradation of an aqueous dye naphthol blue black (NBB). It indicated that the dye NBB can be degraded totally and mineralized into the inorg. products such as  $\text{CO}_2$ ,  $\text{NH}_4^+$ ,  $\text{NO}_3^-$ , and  $\text{SO}_4^{2-}$  ions by irradiating the composite slurry in the near-UV area. Dropped of  $\text{PW}_{11}\text{Ti}$  or  $\text{PW}_{10}\text{Ti}_2$  cluster from the zirconia matrix into the reaction system was hardly observed during the photocatalytic tests, attributed to the strong chemical interactions between the Keggin units and the zirconia support.

CC 60-2 (Waste Treatment and Disposal)

Section cross-reference(s): 40, 74

IT 124-38-9, Carbon dioxide, formation (nonpreparative) 14797-55-8,

Nitrate  $\text{NO}_3^-$ , formation (nonpreparative) 14798-03-9, Ammonium,

formation (nonpreparative) 14808-79-8, Sulfate, formation

(nonpreparative)

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)

(degradation product; photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type polyoxometalates)

IT 84303-06-0 143069-91-4

RL: CAT (Catalyst use); USES (Uses)

(photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type polyoxometalates)

IT 84303-06-0 143069-91-4

RL: CAT (Catalyst use); USES (Uses)

(photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type polyoxometalates)

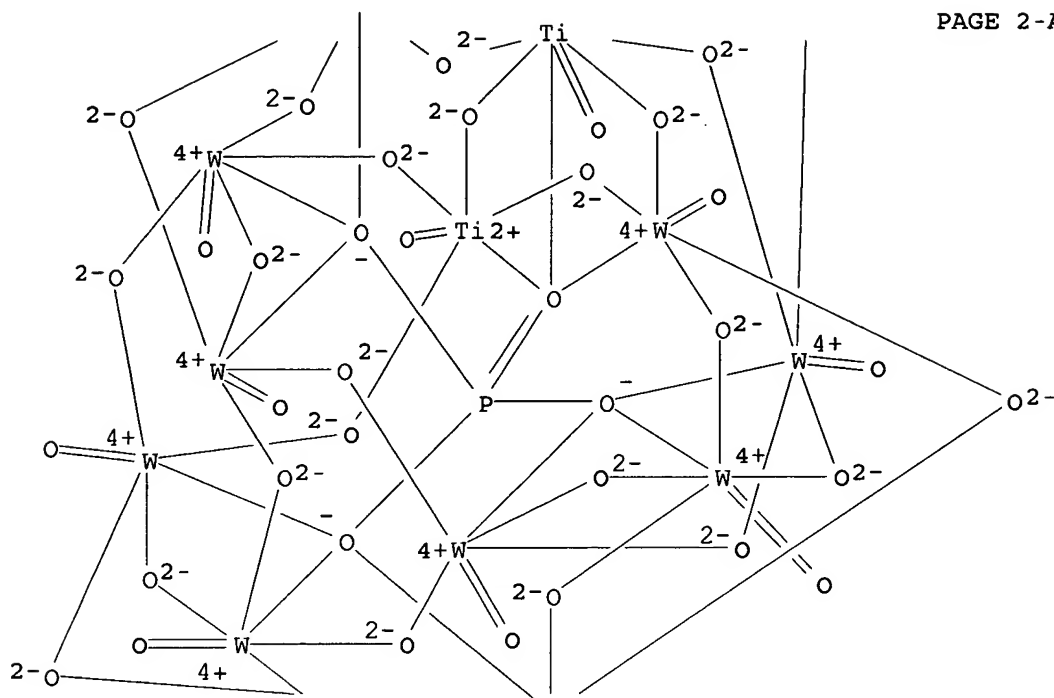
RN 84303-06-0 HCAPLUS

CN Titanate(7-), (heptadeca- $\mu$ -oxodecaoxodecatungstate)hepta- $\mu$ -oxodioxo [ $\mu_{12}$ -[phosphato(3-)- $\kappa\text{O}:\kappa\text{O}:\kappa\text{O}:\kappa\text{O}'$ :.kappa.O': $\kappa\text{O}'$ : $\kappa\text{O}''$ : $\kappa\text{O}''$ : $\kappa\text{O}''$ : $\kappa\text{O}''$ : $\kappa\text{O}''$ : $\kappa\text{O}''$ :.ka.ppa.O''']]di-, heptapotassium (9CI) (CA INDEX NAME)

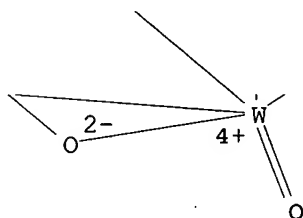
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



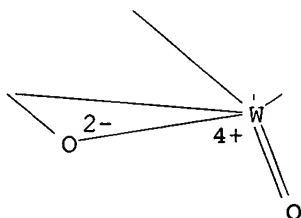
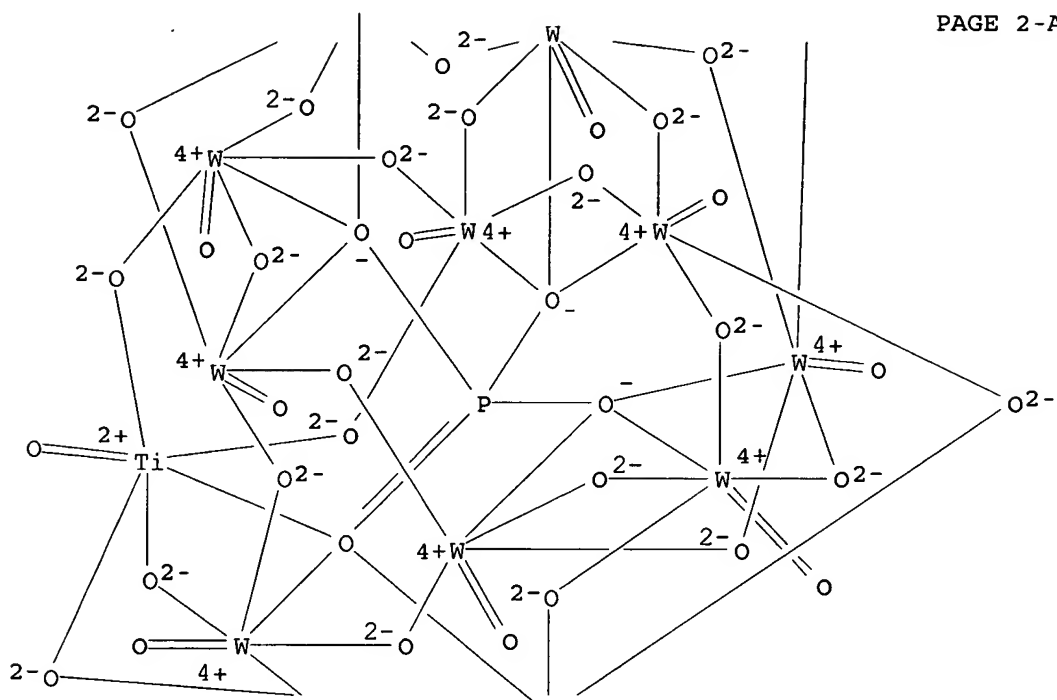
PAGE 3-A



● 7  $K^+$

```
RN      143069-91-4   HCAPLUS
CN      Titanate(5-), (eicosa-μ-oxoundecaοxoundecatungstate)tetra-μ-
        oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO':κO'':κO'':κO'':κO'':κO'']:.kapp
        a.O''']]-, pentalithium (9CI)    (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



● 5 Li<sup>+</sup>

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 14 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:972021 HCAPLUS  
DN 140:16564  
TI Process for producing aromatic compounds by friedel-crafts reaction  
IN Okuhara, Toshio; Nakajo, Tetsuo  
PA Showa Denko K. K., Japan  
SO PCT Int. Appl., 27 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

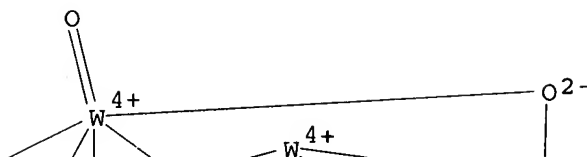
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

```

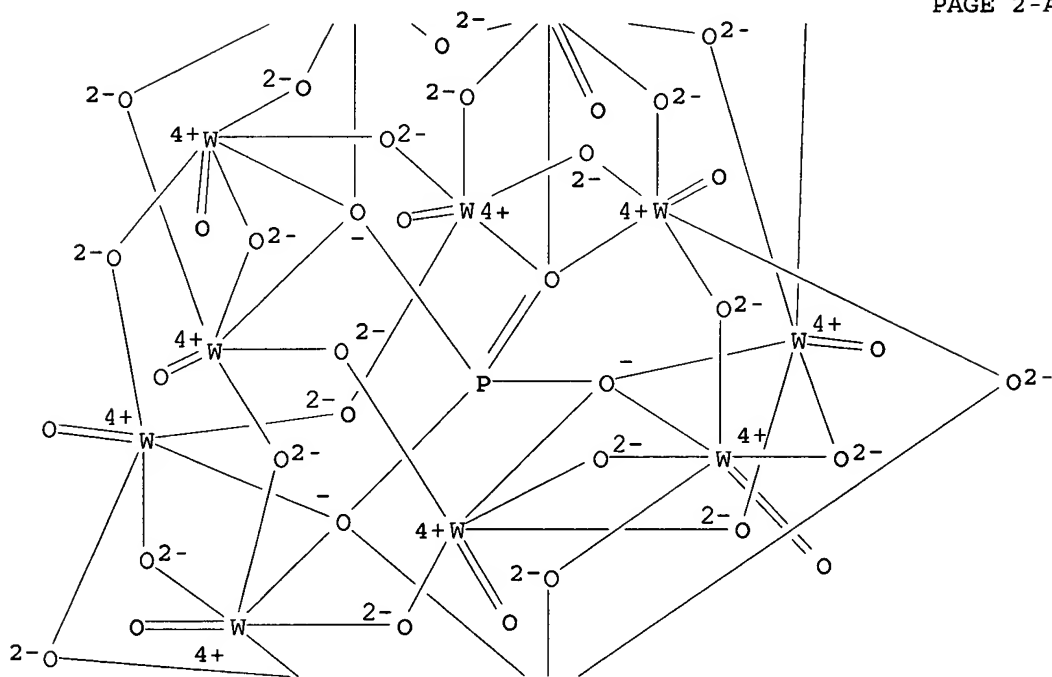
PI WO 2003101925 A1 20031211 WO 2003-JP6078 20030515 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL,
PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
JP 2004059572 A2 20040226 JP 2003-73802 20030318 <--
EP 1511707 A1 20050309 EP 2003-725793 20030515 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
US 2005222457 A1 20051006 US 2004-516454 20041203 <--
PRAI JP 2002-161164 A 20020603 <--
US 2002-386744P P 20020610 <--
WO 2003-JP6078 W 20030515 <--
AB The patent relates to the preparation of an aromatic compound by Friedel-Crafts
reaction product, which comprises reacting an aromatic compound with an ester
compound in the presence of a heteropoly acid-containing solid acid catalyst.
Thus, Friedel Crafts reaction was conducted for a composition
comprising p-xylene and γ-butyrolactone in presence of silica
supported tungstosilicic acid catalyst and produced 5,8-dimethyltetralone
(39.9% yield) and trimethylindanone (2.6% yield).
IC ICM C07C045-46
ICS C07C045-59; C07C051-09; C07B041-06; C07B041-08
CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 24
IT 1343-93-7, Phosphotungstic acid
RL: CAT (Catalyst use); USES (Uses)
(producing aromatic compds. by Friedel-Crafts reaction of lactone in
presence of supported heteropoly acid catalyst)
IT 1343-93-7, Phosphotungstic acid
RL: CAT (Catalyst use); USES (Uses)
(producing aromatic compds. by Friedel-Crafts reaction of lactone in
presence of supported heteropoly acid catalyst)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ12-[phosphato(3-)-
κO:κO:κO:κO':κO':κO':κO'':kappa
.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

```

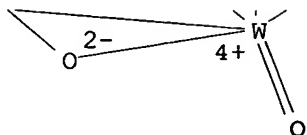
PAGE 1-A



PAGE 2-A



PAGE 3-A

●3 H<sup>+</sup>

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 15 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:849280 HCAPLUS  
DN 140:113214  
TI Selective hydrogenation of cinnamaldehyde over Raney nickel catalysts  
modified with salts of heteropolyacids  
AU Liu, Bai-jun; Cai, Tian-xi  
CS The Key Lab. Catalysis, China Natl. Petroleum Corp., Univ. Petroleum  
(Beijing), Changping, Beijing, 102249, Peop. Rep. China  
SO Fenzi Cuihua (2003), 17(4), 270-273  
CODEN: FECUEN; ISSN: 1001-3555  
PB Kexue Chubanshe  
DT Journal  
LA Chinese  
OS CASREACT 140:113214  
AB Liquid phase selective hydrogenation of cinnamaldehyde to cinnamyl alc. on  
Raney nickel catalyst modified by salts (including alkali metals, alkaline  
earth metals, and transition metals) of heteropolyacids with Keggin type  
structure was studied. Effects of loading, competitive cations and  
heteropolyanions on catalytic activity and selectivity were examined All  
Raney nickel catalysts modified with salts of heteropolyacids show lower  
catalytic activity than unmodified Raney nickel catalysts;  
12-molybdophosphates give the best selectivity among the modifiers. As  
far as the effect of competitive cations on catalytic properties is  
concerned, transition metals are better than both alkali metals and alkaline  
earth metals. Among the transition metal salts, Cu salt is superb in  
performance. A selectivity as high as 26.4% was attained when an amount of  
6.3% Cu1.5PMo12O40 was deposited on the Raney nickel catalyst.  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 67  
IT 1313-30-0 7440-02-0, Nickel, uses 12263-08-0  
12263-10-4 12263-11-5 58398-88-2  
74987-91-0 79900-09-7  
RL: CAT (Catalyst use); USES (Uses)  
(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts  
modified with salts of heteropolyacid-s)  
IT 104-55-2, Cinnamaldehyde 3251-23-8 12026-57-2,  
12-Molybdophosphoric acid 20427-59-2, Copper hydroxide  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts  
modified with salts of heteropolyacid-s)  
IT 1313-30-0 12263-08-0 12263-10-4  
12263-11-5 58398-88-2 74987-91-0  
79900-09-7  
RL: CAT (Catalyst use); USES (Uses)

(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts  
modified with salts of heteropolyacid-s)

RN 1313-30-0 HCAPLUS

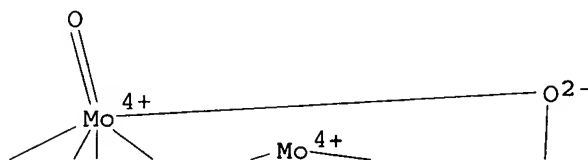
CN Molybdate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':.kappa

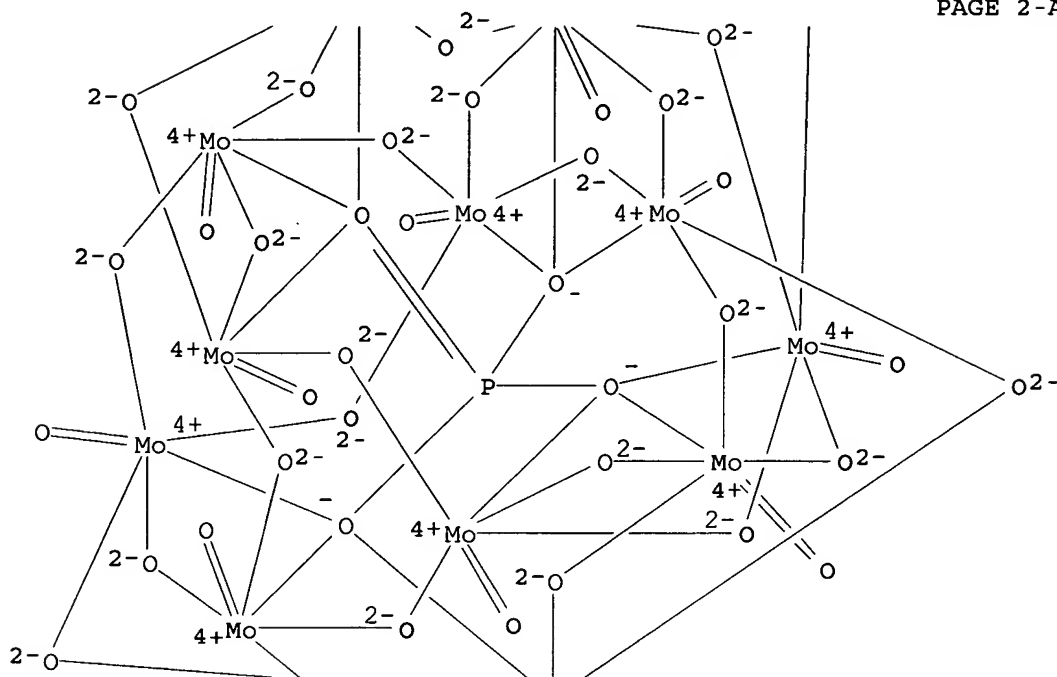
.O':κO':κO':κO':κO']dodeca-, trisodium

(9CI) (CA INDEX NAME)

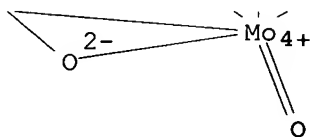
PAGE 1-A



PAGE 2-A

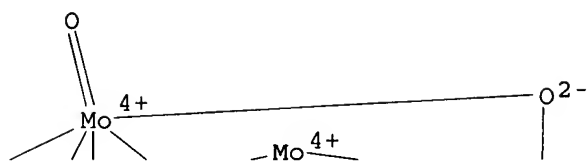


PAGE 3-A

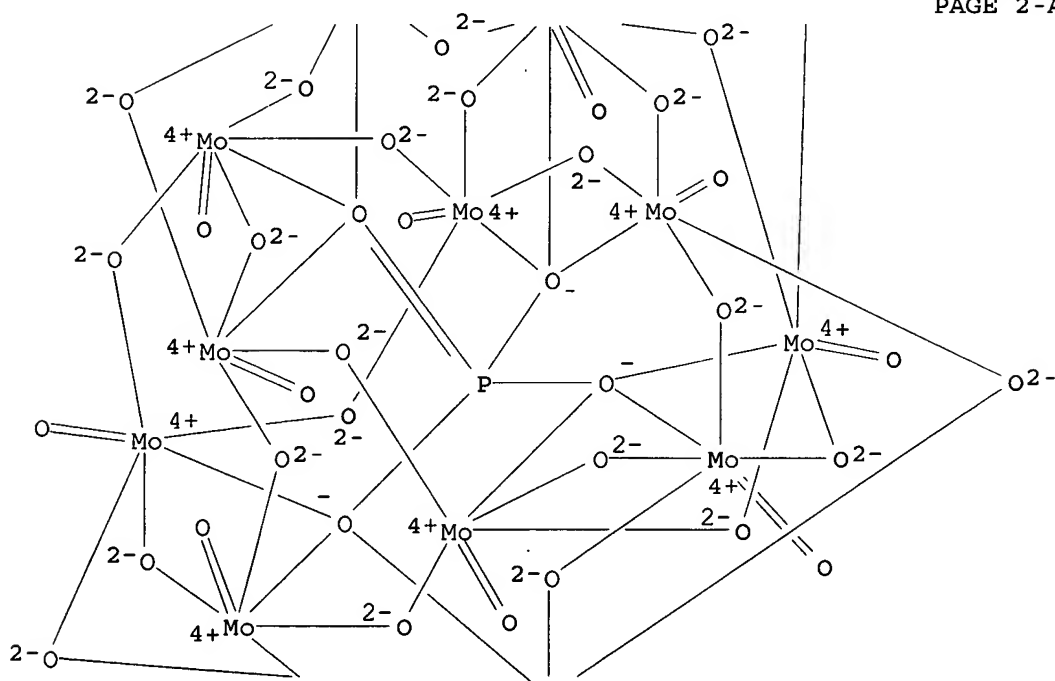
● 3 Na<sup>+</sup>

RN 12263-08-0 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, cobalt(2+)  
 (2:3) (9CI) (CA INDEX NAME)

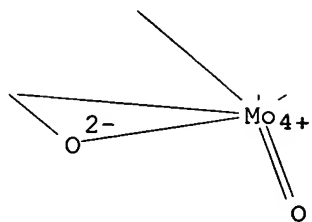
PAGE 1-A



PAGE 2-A







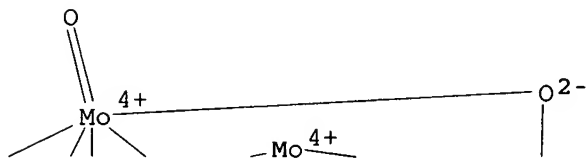
PAGE 3-A

●3/2 Co(II) 2+

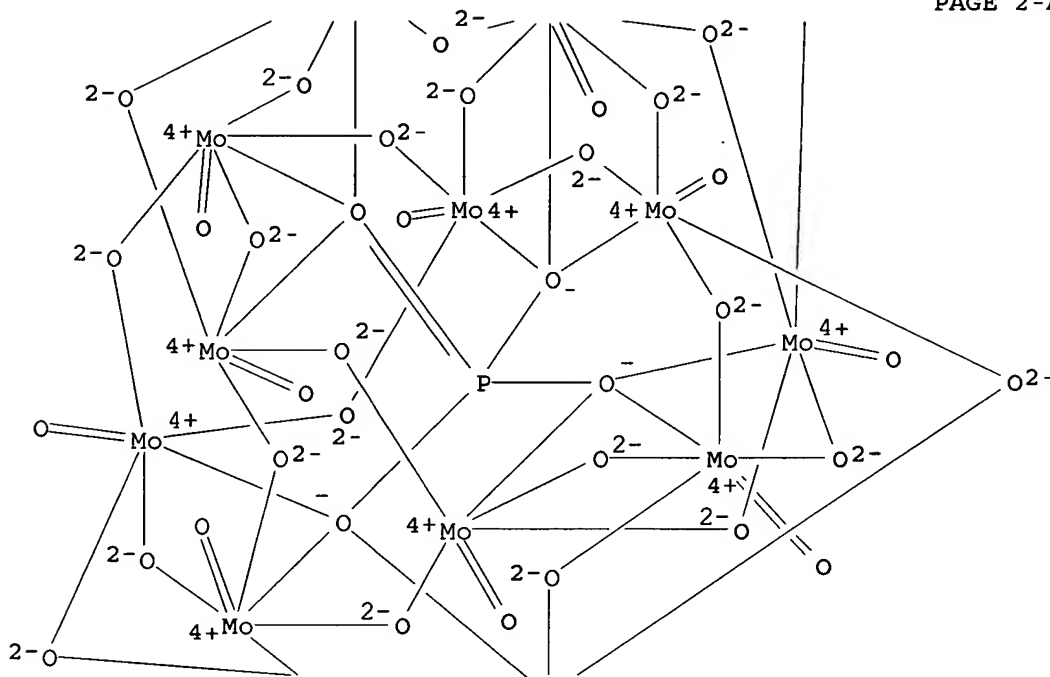
RN 12263-10-4 HCAPLUS

CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO']dodeca-, copper(2+)  
 (2:3) (9CI) (CA INDEX NAME)

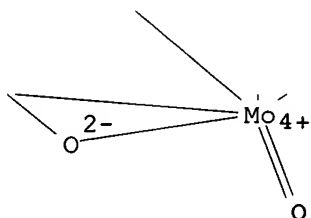
PAGE 1-A



PAGE 2-A



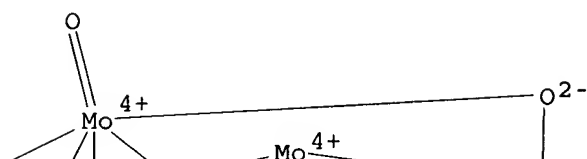
PAGE 3-A



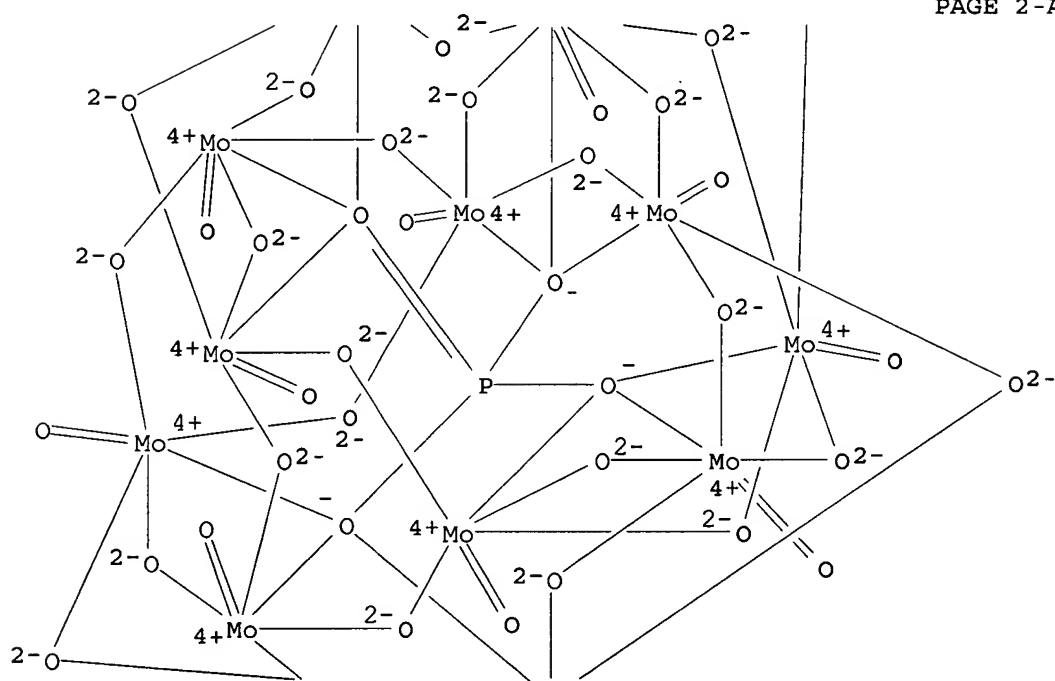
● 3/2 Cu(II) 2+

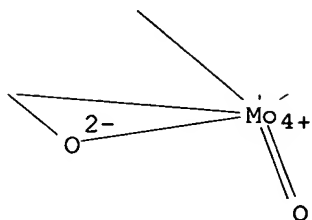
RN 12263-11-5 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, iron(3+)  
 (1:1) (9CI) (CA INDEX NAME)

PAGE 1-A

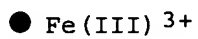


PAGE 2-A





PAGE 3-A

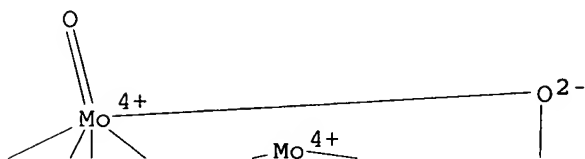


```

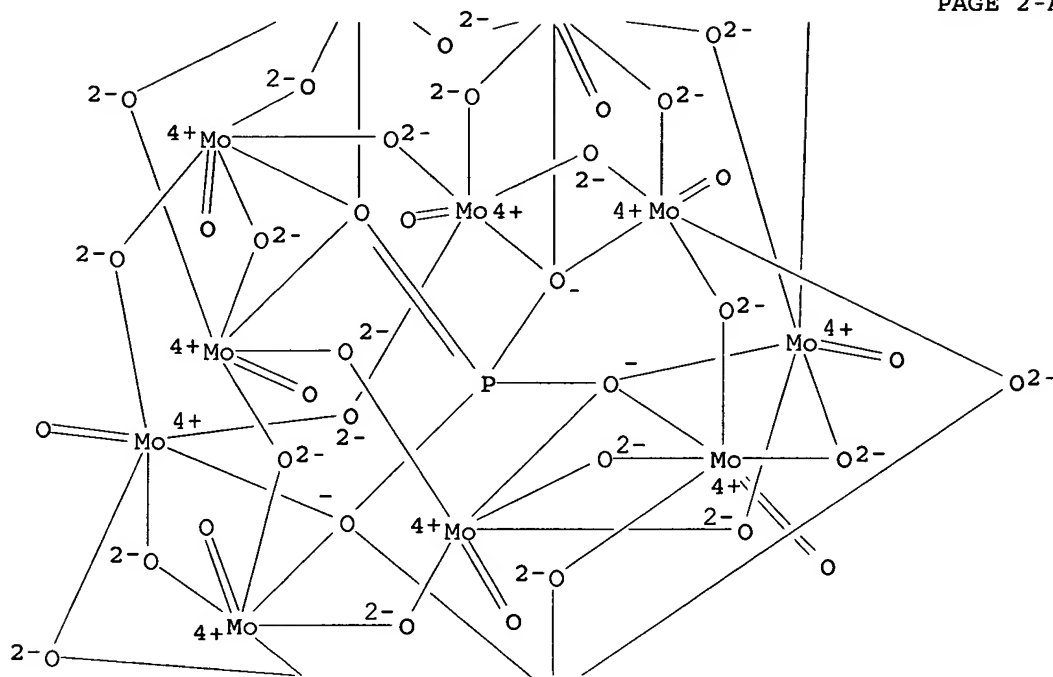
RN      58398-88-2   HCAPLUS
CN      Molybdate(3-), tetracosamolybdate(3-), tetracosamolybdate(3-),
        kappa[Mo12O42]dodecamolybdate(3-), calcium
        molybdate(3-), tetracosamolybdate(3-), tetracosamolybdate(3-),
        kappa[Mo12O42]dodecamolybdate(3-), calcium
(2:3) (9CI) (CA INDEX NAME)

```

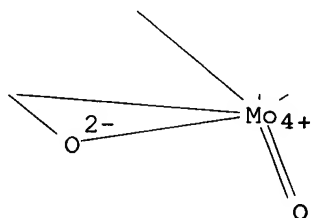
PAGE 1-A



PAGE 2-A

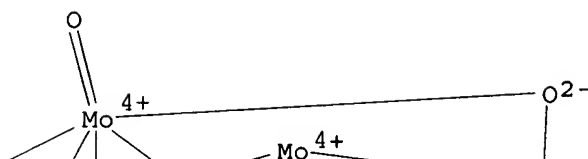


PAGE 3-A

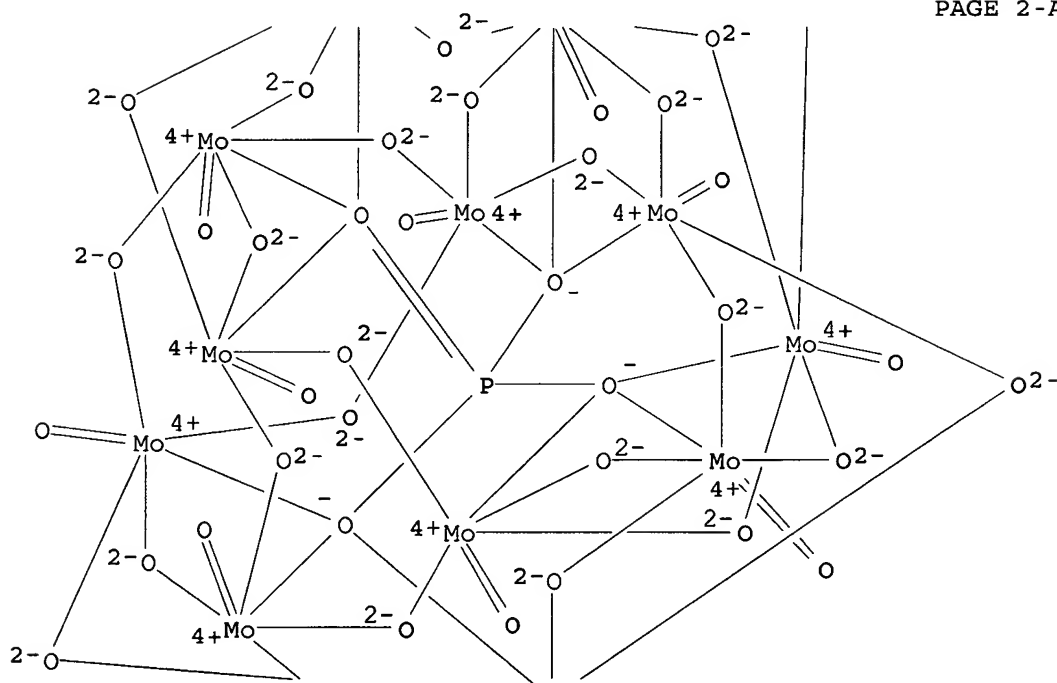
● 3/2 Ca<sup>2+</sup>

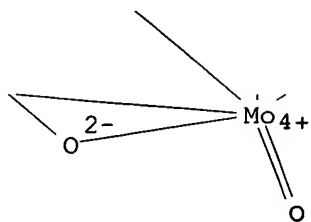
RN 74987-91-0 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, zinc (2:3)  
 (9CI) (CA INDEX NAME)

PAGE 1-A

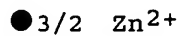


PAGE 2-A





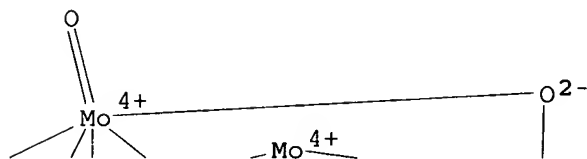
PAGE 3-A



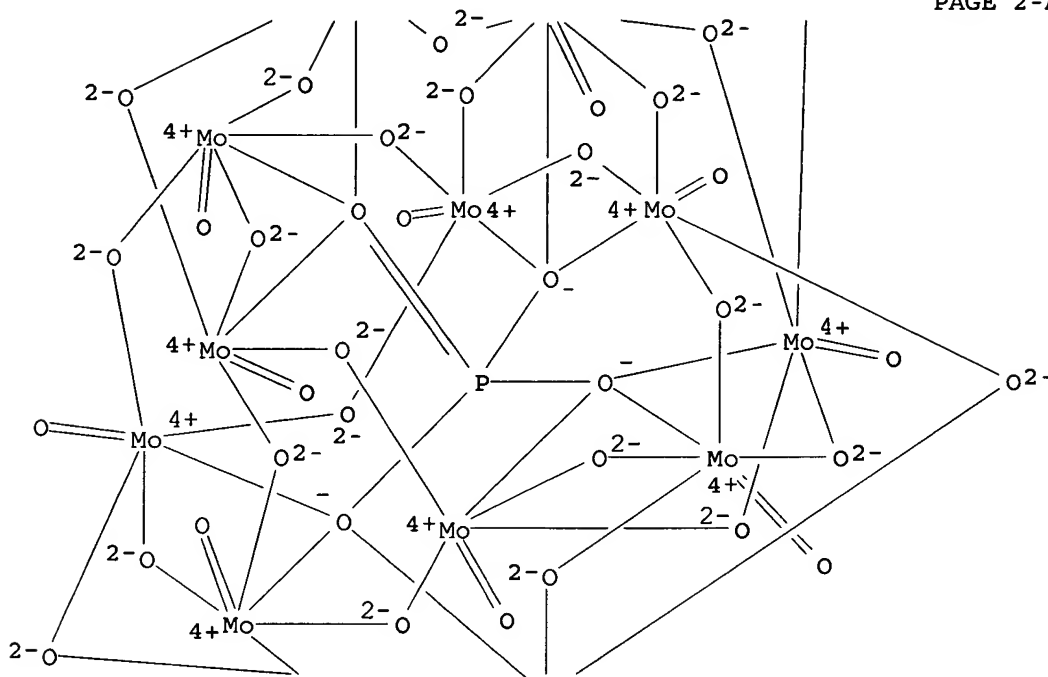
RN 79900-09-7 HCAPLUS

CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':κappa  
.O':κO':κO':κO':κO']dodeca-, chromium(3+)  
(1:1) (9CI) (CA INDEX NAME)

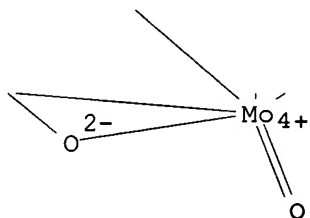
PAGE 1-A



PAGE 2-A



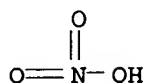
PAGE 3-A



● Cr(III) 3+

IT 3251-23-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (selective hydrogenation of cinnamaldehyde over Raney nickel catalysts  
 modified with salts of heteropolyacid-s)  
 RN 3251-23-8 HCAPLUS  
 CN Nitric acid, copper(2+) salt (8CI, 9CI) (CA INDEX NAME)





● 1/2 Cu(II)

L32 ANSWER 16 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2003:730713 HCAPLUS  
 DN 140:376970  
 TI Hydroxylation of benzene by O<sub>2</sub> and H<sub>2</sub> gas mixture on catalysts containing platinum metals and heteropolycompounds  
 AU Kuznetsova, N. I.; Kuznetsova, L. I.; Likholobov, V. A.  
 CS Inst. Kataliza im. G. K. Boreskova, SO RAN, Novosibirsk, Russia  
 SO Kataliz v Promyshlennosti (2003), (4), 17-23  
 CODEN: KPARAU  
 PB ZAO "Kalvis"  
 DT Journal  
 LA Russian  
 OS CASREACT 140:376970  
 AB Gas-phase hydroxylation of benzene with a mixture of O<sub>2</sub> and H<sub>2</sub> proceeded over two-component catalysts based on platinum metals and heteropolar compds. has been investigated. The productivity of the catalysts related to metal quantity was found with varying qual. and quant. **composition** of the active components, silica gel carrier surface area, and temperature in the range of 180-250°C. The catalysts of optimal **composition** at the appropriate temperature produce up to 400 mol of phenol per 1 g-atom Pd or Pt per 1 h. Activity of the catalysts is associated with contact zones between platinum metal and heteropolar compound, which can be observed by electron microscopy.  
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
 IT 142-71-2, Copper diacetate 373-02-4, Nickel diacetate 1314-62-1, Vanadium pentoxide, uses 1343-93-7, Tungstophosphoric acid (H<sub>3</sub>W<sub>12</sub>PO<sub>40</sub>) 7447-39-4, Copper dichloride, uses 7631-86-9, Silica, uses 7647-10-1, Palladium dichloride 12015-91-7, Potassium chlororuthenate(IV) (K<sub>2</sub>RuCl<sub>5</sub>(OH)) 12026-57-2, Molybdophosphoric acid (H<sub>3</sub>Mo<sub>12</sub>PO<sub>40</sub>) 12293-15-1, Molybdovanadophosphoric acid (H<sub>4</sub>Mo<sub>11</sub>PVO<sub>40</sub>) 12293-21-9, Molybdovanadophosphoric acid (H<sub>5</sub>Mo<sub>10</sub>V<sub>2</sub>PO<sub>40</sub>) 12293-24-2, Phosphomolybdovanadic acid (H<sub>6</sub>PMo<sub>9</sub>V<sub>3</sub>O<sub>40</sub>) 12398-73-1, Tungstovanadophosphoric acid (H<sub>4</sub>PW<sub>11</sub>VO<sub>40</sub>) 12411-60-8, Molybdotungstophosphoric acid (H<sub>3</sub>Mo<sub>6</sub>PW<sub>6</sub>O<sub>40</sub>) 12786-62-8, Tungstovanadophosphoric acid (H<sub>6</sub>PW<sub>9</sub>V<sub>3</sub>O<sub>40</sub>) 16941-12-1, Platinic chloride 36732-55-5, Chloroiridic(III) acid (H<sub>3</sub>IrCl<sub>6</sub>) 146066-47-9, Tungstozirconaphosphoric acid (H<sub>5</sub>PW<sub>11</sub>ZrO<sub>40</sub>) 667419-85-4, Rhodium, trichlorotrihydroxy-, trihydrogen  
 RL: CAT (Catalyst use); USES (Uses)  
 (hydroxylation of benzene by O<sub>2</sub> and H<sub>2</sub> gas mixture on catalysts containing platinum metals and heteropolycompounds)  
 IT 1343-93-7, Tungstophosphoric acid (H<sub>3</sub>W<sub>12</sub>PO<sub>40</sub>) 12026-57-2, Molybdophosphoric acid (H<sub>3</sub>Mo<sub>12</sub>PO<sub>40</sub>) 12293-15-1, Molybdovanadophosphoric acid (H<sub>4</sub>Mo<sub>11</sub>PVO<sub>40</sub>) 12293-21-9, Molybdovanadophosphoric acid (H<sub>5</sub>Mo<sub>10</sub>V<sub>2</sub>PO<sub>40</sub>) 12293-24-2, Phosphomolybdovanadic acid (H<sub>6</sub>PMo<sub>9</sub>V<sub>3</sub>O<sub>40</sub>) 12398-73-1, Tungstovanadophosphoric acid (H<sub>4</sub>PW<sub>11</sub>VO<sub>40</sub>) 12411-60-8, Molybdotungstophosphoric acid (H<sub>3</sub>Mo<sub>6</sub>PW<sub>6</sub>O<sub>40</sub>) 12786-62-8,

Tungstovanadophosphoric acid (H6PW9V3O40) 146066-47-9,

Tungstozirconaphosphoric acid (H5PW11ZrO40)

RL: CAT (Catalyst use); USES (Uses)

(hydroxylation of benzene by O<sub>2</sub> and H<sub>2</sub> gas mixture on catalysts containing platinum metals and heteropolycompounds)

RN 1343-93-7 HCAPLUS

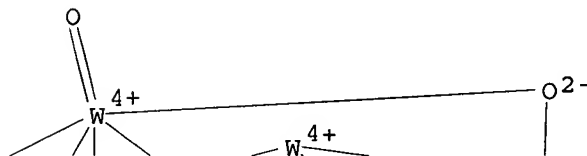
CN Tungstate(3-), tetracosam-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':.kappa

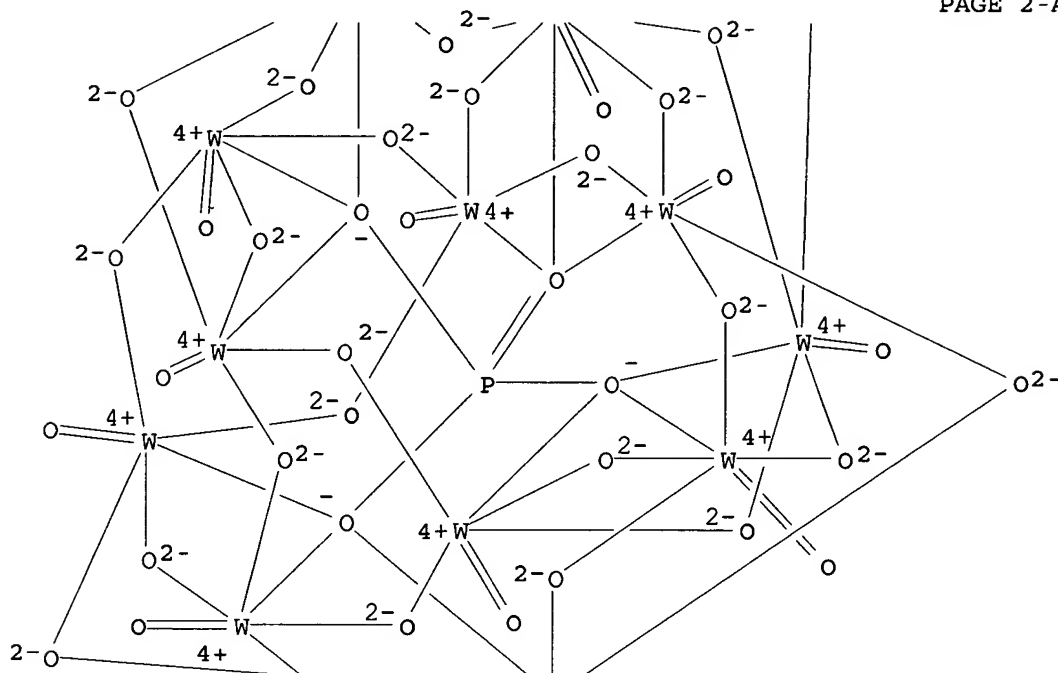
.O'':κO'':κO'':κO'':κO'':κO'']dodeca-, trihydrogen

(9CI) (CA INDEX NAME)

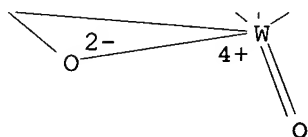
PAGE 1-A



PAGE 2-A

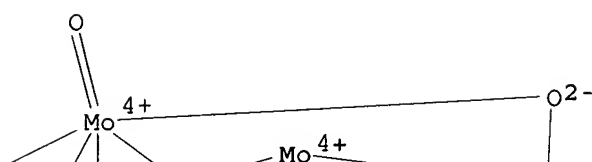


PAGE 3-A

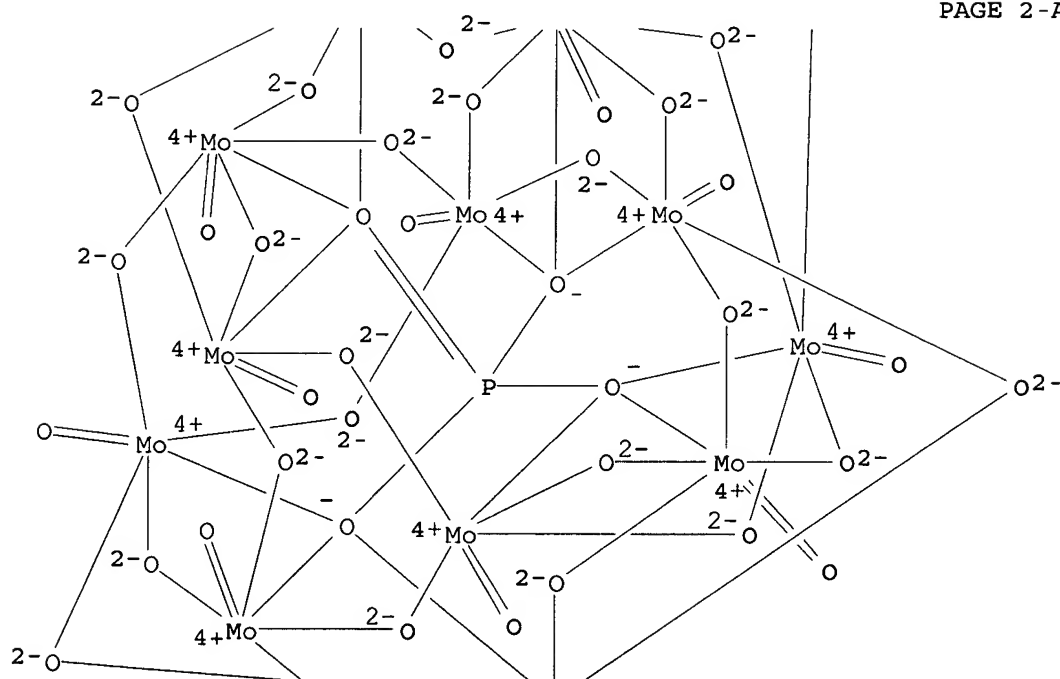
● 3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

PAGE 1-A

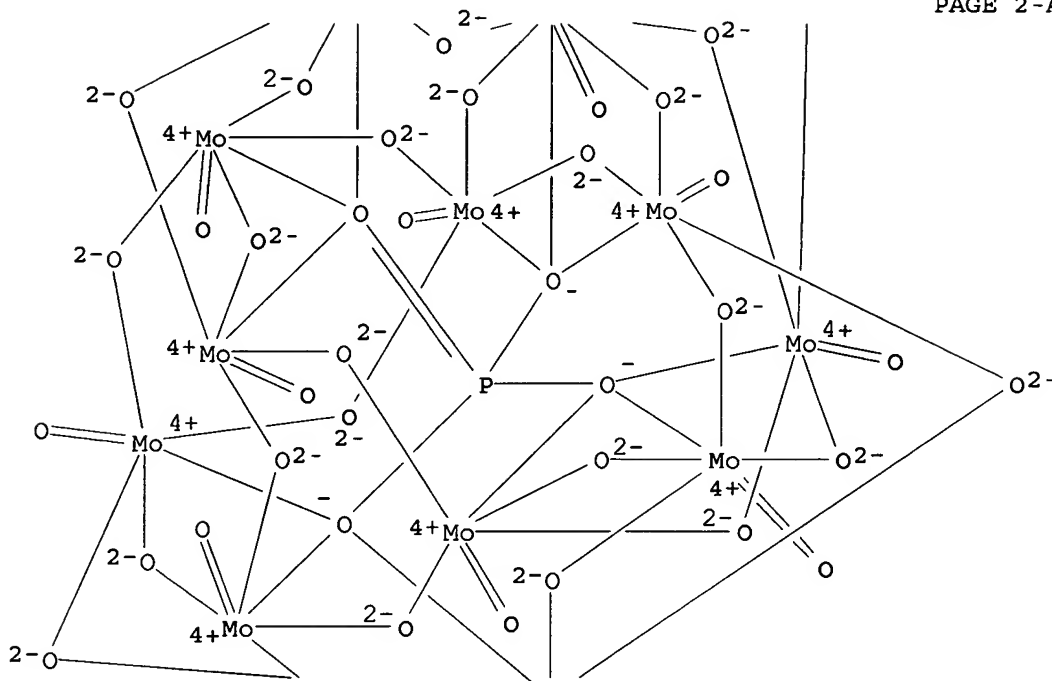


PAGE 2-A

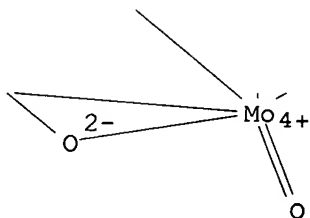




PAGE 2-A

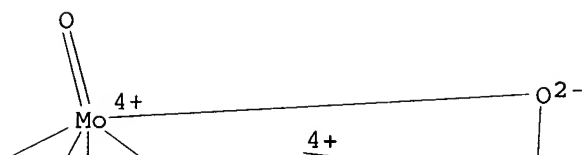


PAGE 3-A

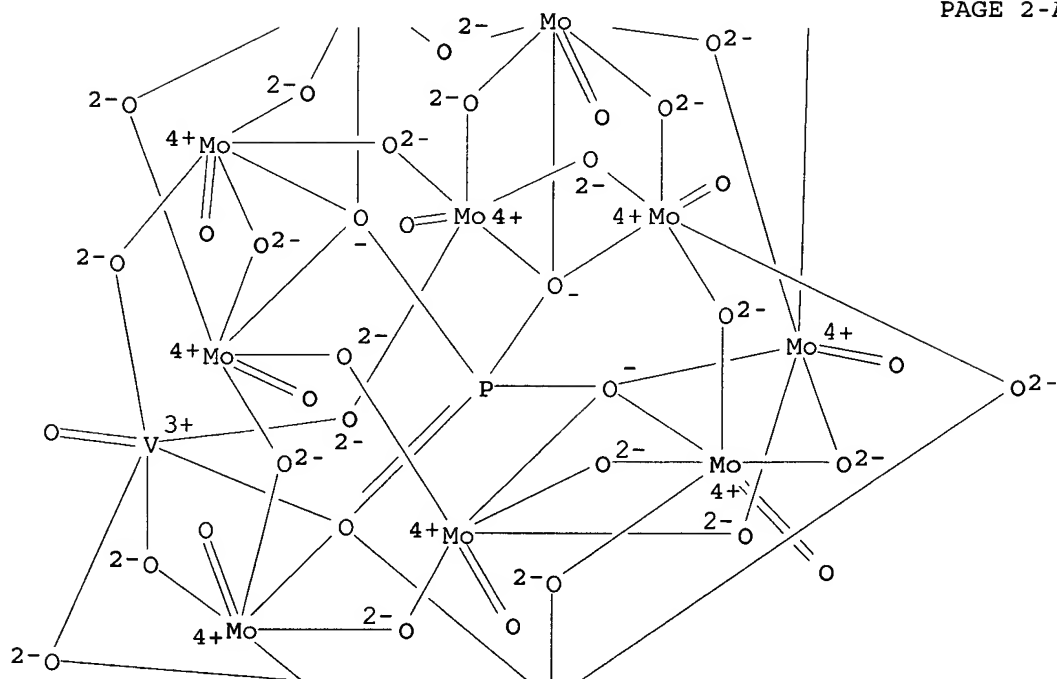
● 4 H<sup>+</sup>

RN 12293-21-9 HCAPLUS  
 CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-  
 oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa  
 .O':κO':κO':κO':κO':κO':κO':.ka  
 ppa.O']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



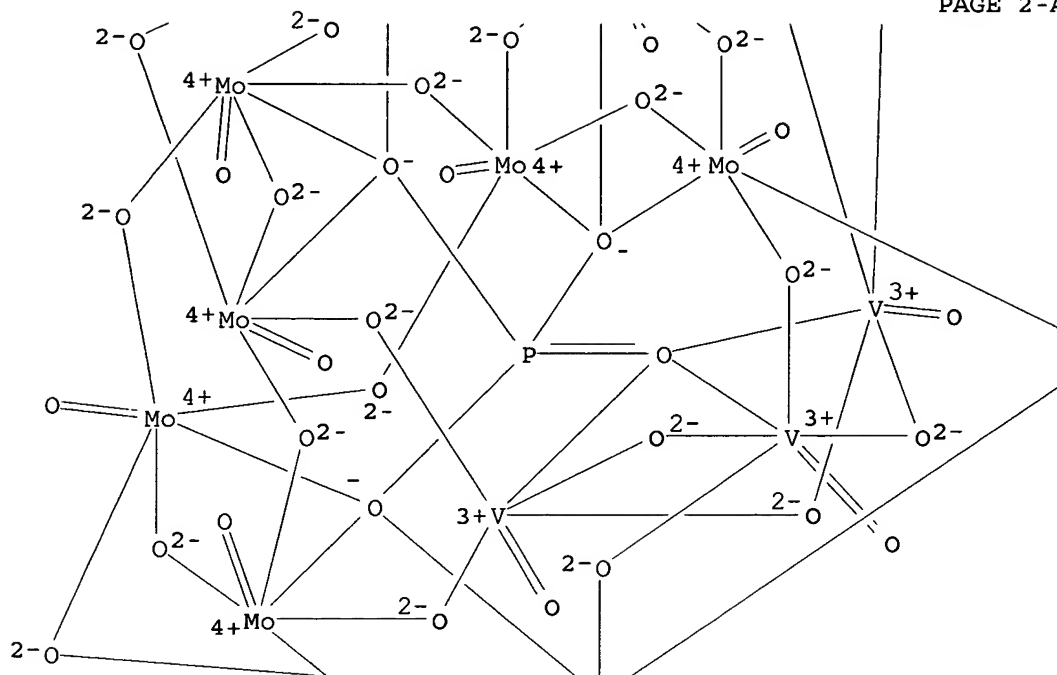
PAGE 2-A







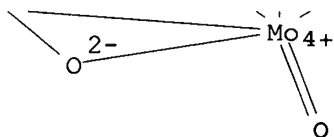
PAGE 2-A



PAGE 2-B

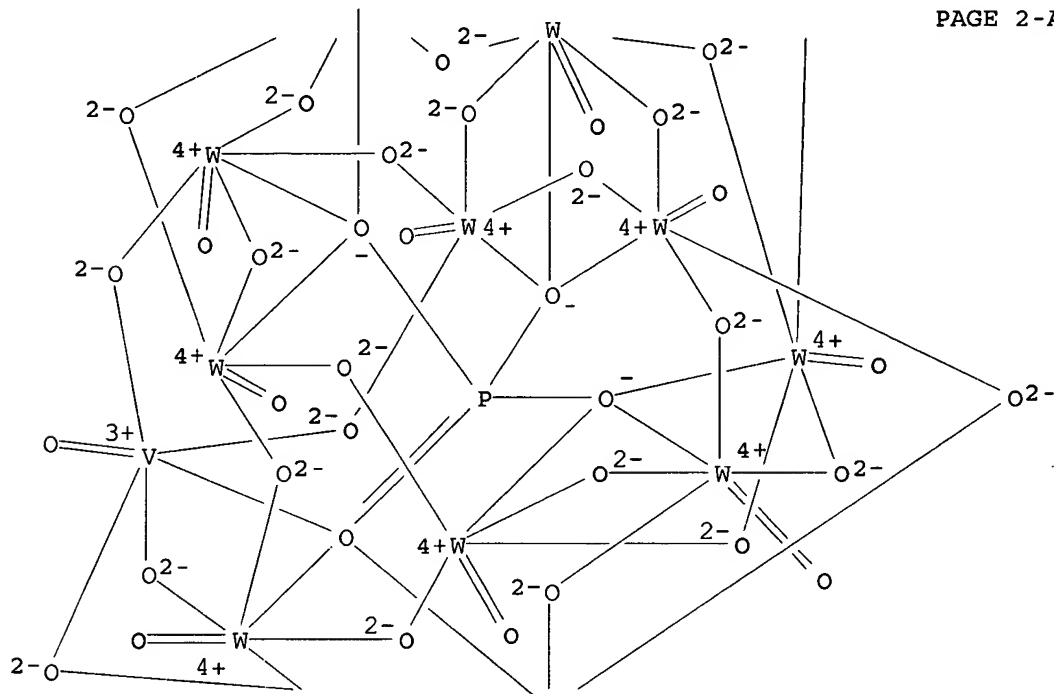


PAGE 3-A

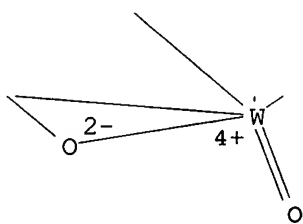
● 6 H<sup>+</sup>

```
RN      12398-73-1   HCAPLUS  
CN      Vanadate(4-), (eicosa-μ-oxoundecaοxoundecatungstate) tetra-μ-  
        οxoοxο [μ12-[phosphato(3-) -κO:κO:κO:κO':κO  
        ':κO'ο':κO''':κO'''':κO''':κO''':κapp  
        a.O''']] -, tetrahydrogen (9CI) (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A

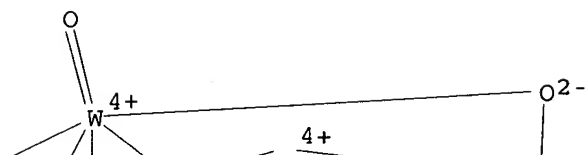


PAGE 3-A

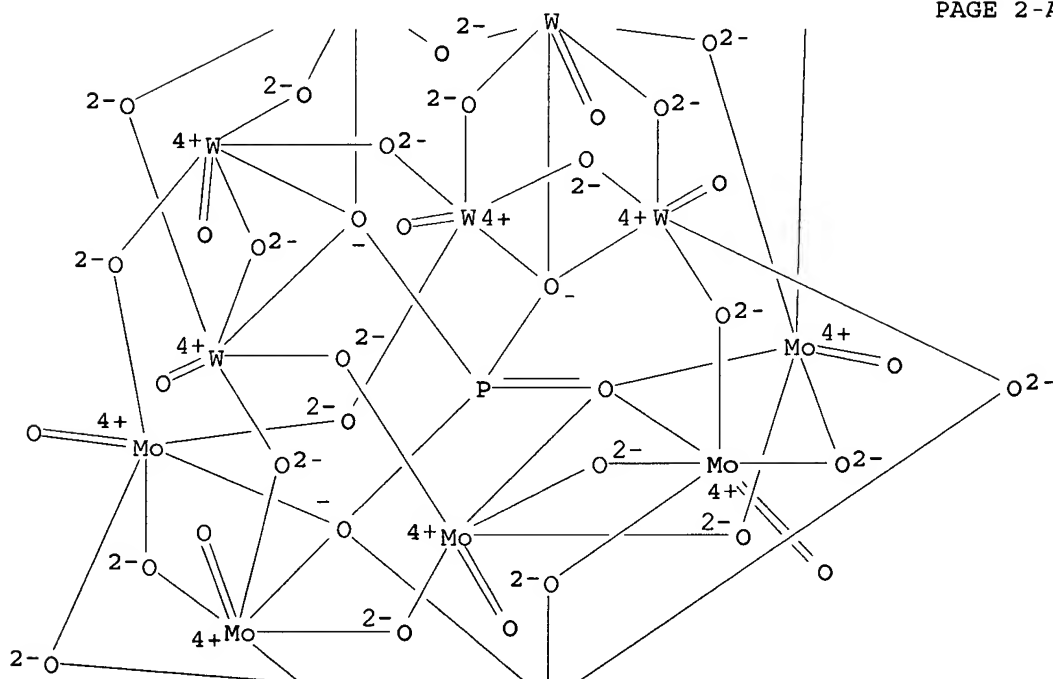
● 4 H<sup>+</sup>

RN 12411-60-8 HCAPLUS  
CN Tungstate(3-), (octa- $\mu$ -oxohexaoxohexamolybdate) hexadeca- $\mu$ -oxohexaoxo  $[\mu 12 - [\text{phosphato}(3-) - \text{O} : \text{O} : \text{O} : \text{O}'] : \text{.kap}$   
 $\text{pa.O}' : \text{O} : \text{O}' : \text{O}'' : \text{O}'' : \text{O}''' : \text{O}''' : \text{O}''' : \text{O}''' : \text{O}''' : \text{O}''']$   
 $\text{kappa.O}''']]$ hexa-, trihydrogen(9CI) (CA INDEX NAME)

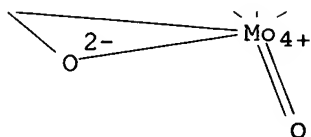
PAGE 1-A



PAGE 2-A



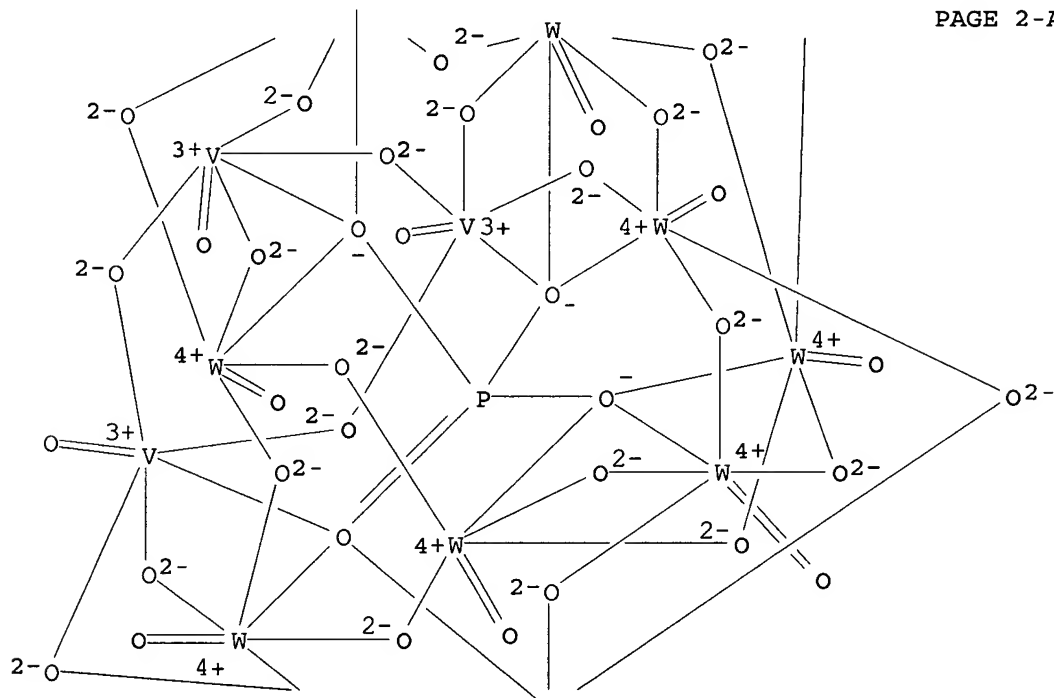
PAGE 3-A

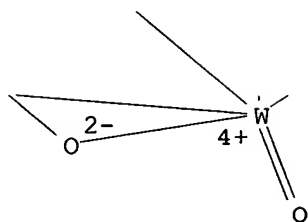
● 3 H<sup>+</sup>

RN 12786-62-8 HCAPLUS  
 CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxonona-oxononatungstate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



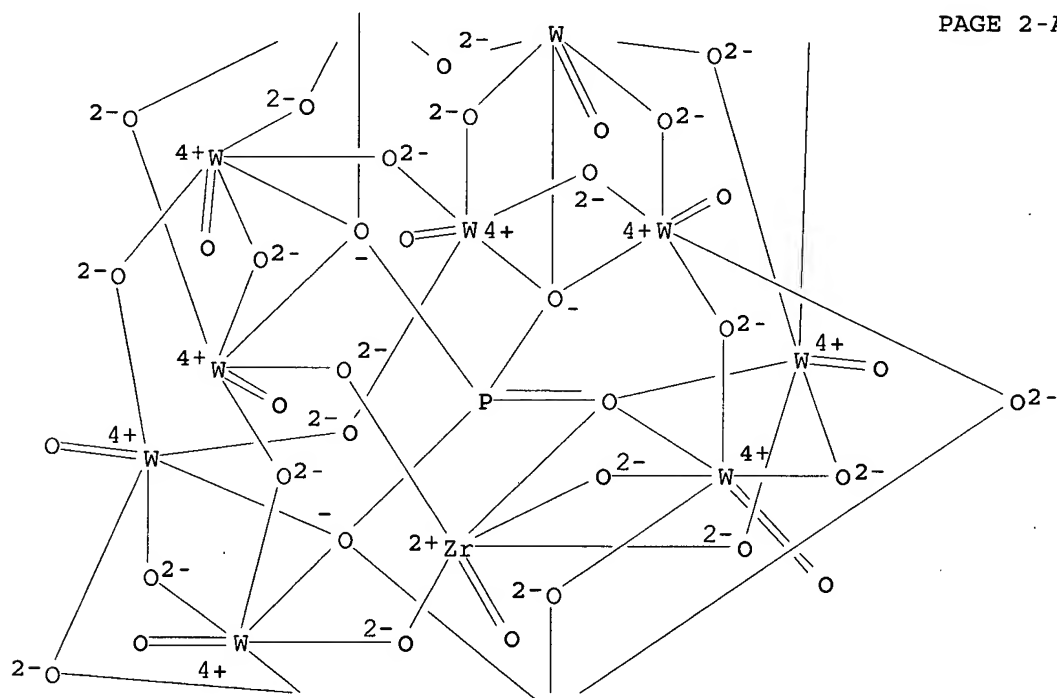


PAGE 3-A

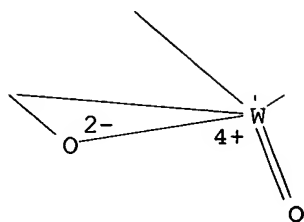


```
RN      146066-47-9   HCAPLUS
CN      Zirconate(5-), (eicosa-μ-oxoundeca-oxoundecatungstate)tetra-μ-
        oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO':κO''':κO''':κO''':κO''':κO''':κO''':κO''']]-, pentahydrogen (9CI)  (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



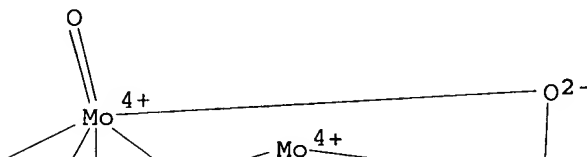
PAGE 3-A

●5 H<sup>+</sup>

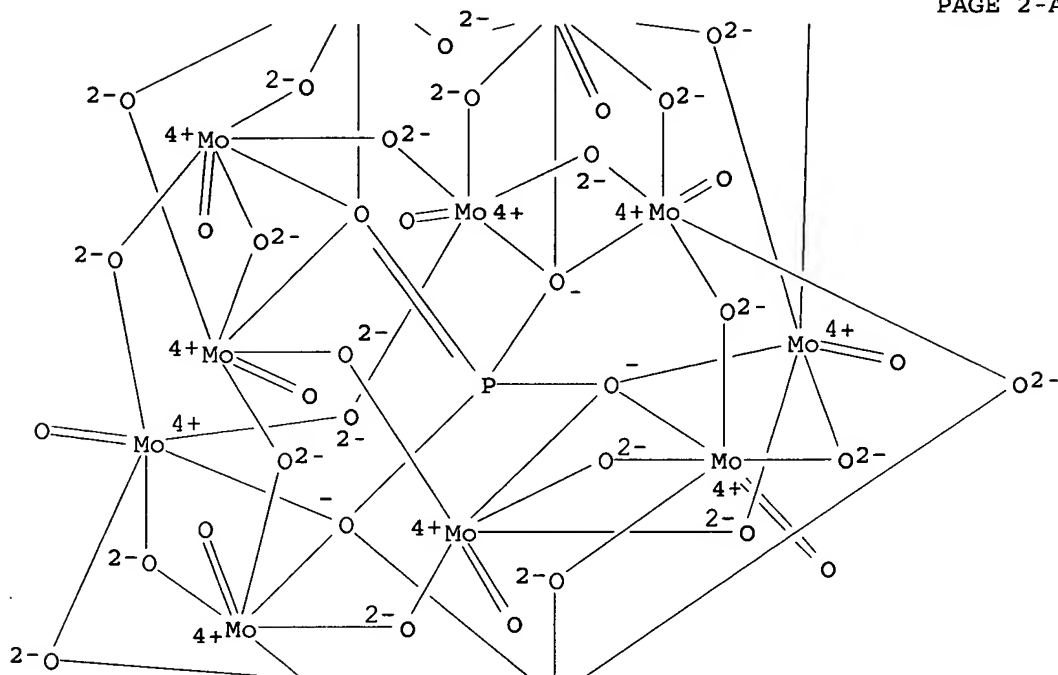
L32 ANSWER 17 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2003:698033 HCAPLUS  
 DN 140:217302  
 TI Oxidation of hydrocarbons by dioxygen reductively activated on platinum and heteropoly compounds  
 AU Kuznetsova, N. I.; Kirillova, N. V.; Kuznetsova, L. I.; Likholobov, V. A.  
 CS Boreskov Institute of Catalysis, Novosibirsk, 630090, Russia  
 SO Journal of Molecular Catalysis A: Chemical (2003), 204-205, 591-597  
 CODEN: JMCCF2; ISSN: 1381-1169  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 OS CASREACT 140:217302  
 AB Based on Pt and heteropoly compds. (HPC), catalysts are applied to liquid-phase oxidation of cyclohexane and cyclohexene with a mixture of O<sub>2</sub> and H<sub>2</sub> gases. Platinum catalyst in the presence of PW11 and PW11Fe HPC represent the most active catalytic systems for alkene oxidation, whereas highest reactivity of cyclohexane was exhibited in the presence of PMo12 HPC. Activity of the catalytic systems and composition of the oxygenated products are controlled by the nature of active intermediates generated under the action of the different HPC.  
 CC 24-5 (Alicyclic Compounds)  
 IT 7440-06-4, Platinum, uses 12026-57-2 12293-15-1 12293-21-9 12293-24-2 12398-73-1 12786-62-8 53749-36-3 53749-37-4 104484-97-1 134360-58-0 135480-92-1 144740-01-2 144740-03-4 144740-04-5 144839-08-7 145238-80-8 146066-47-9 200558-44-7  
 RL: CAT (Catalyst use); USES (Uses)  
 (oxidation of cyclohexane and cyclohexene by dioxygen reductively activated on platinum and heteropoly compds.)  
 IT 12411-60-8P  
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (oxidation of cyclohexane and cyclohexene by dioxygen reductively activated on platinum and heteropoly compds.)  
 IT 12026-57-2 12293-15-1 12293-21-9 12293-24-2 12398-73-1 12786-62-8 53749-36-3 53749-37-4 104484-97-1 134360-58-0 144839-08-7 146066-47-9 200558-44-7  
 RL: CAT (Catalyst use); USES (Uses)  
 (oxidation of cyclohexane and cyclohexene by dioxygen reductively

activated on platinum and heteropoly compds.)  
RN 12026-57-2 HCAPLUS  
CN Molybdate(3-), tetracosamolybdoxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':κappa  
.O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

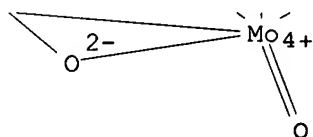
PAGE 1-A



PAGE 2-A



PAGE 3-A

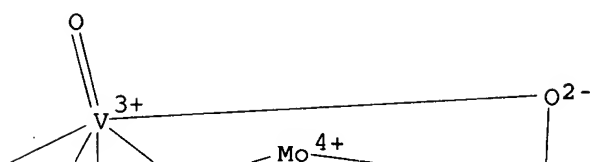


● 3 H<sup>+</sup>

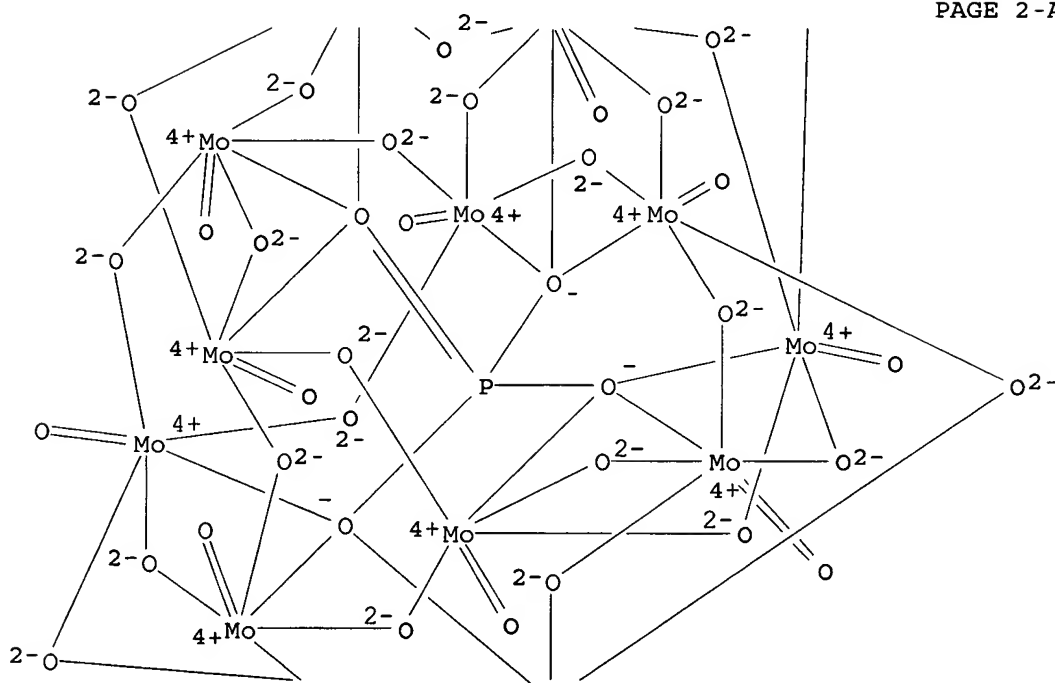
```
RN      12293-15-1   HCAPLUS
CN      Vanadate(4-), (eicosa-μ-oxoundecaοxoundecamolybdate)tetra-μ-
        oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO':κO'':κO'':κO'':κO'':κO'':κO'':κapp
        a.O'']]-, tetrahydrogen (9CI)    (CA INDEX NAME)
```

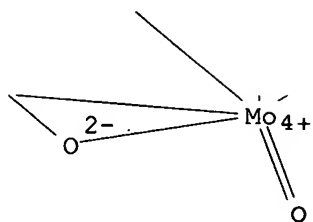


PAGE 1-A



PAGE 2-A



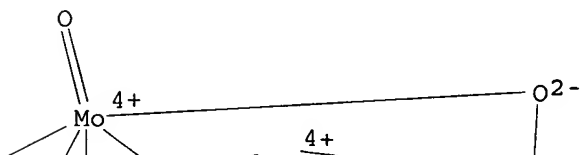


PAGE 3-A

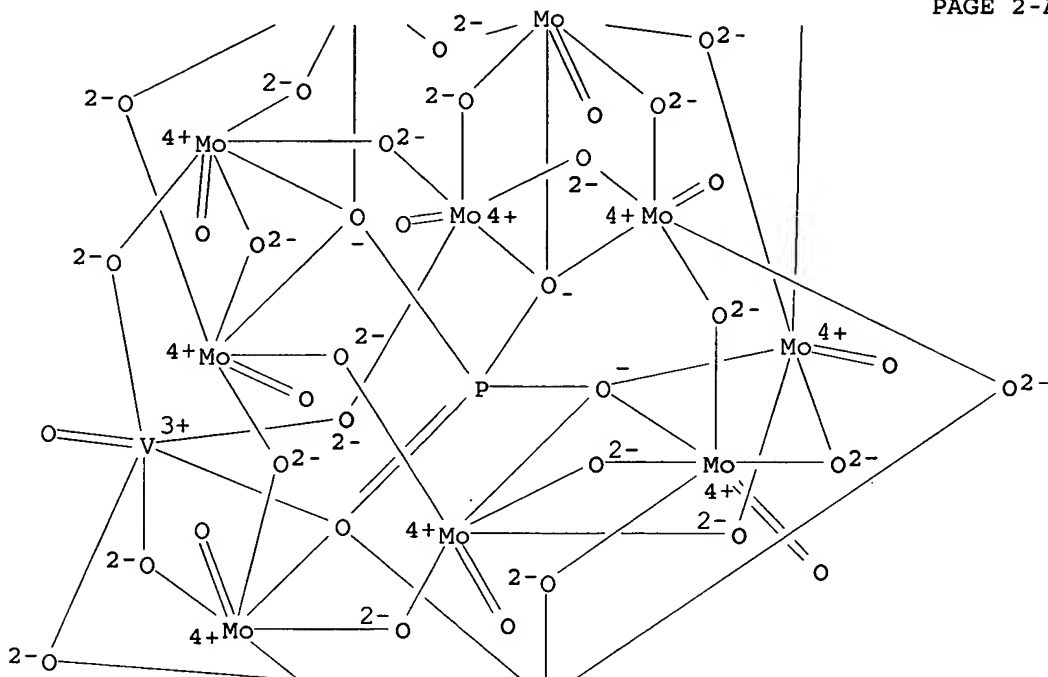
●4 H<sup>+</sup>

RN 12293-21-9 HCAPLUS  
 CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate) hepta-μ-  
 oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa  
 .O':κO':κO':κO':κO':κO':κO':κO':.ka  
 ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

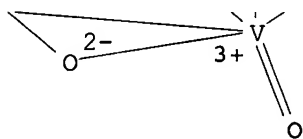
PAGE 1-A



PAGE 2-A

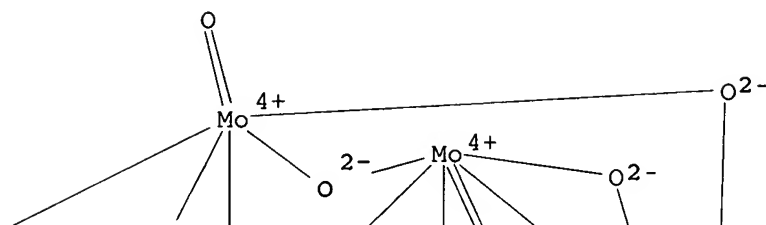


PAGE 3-A

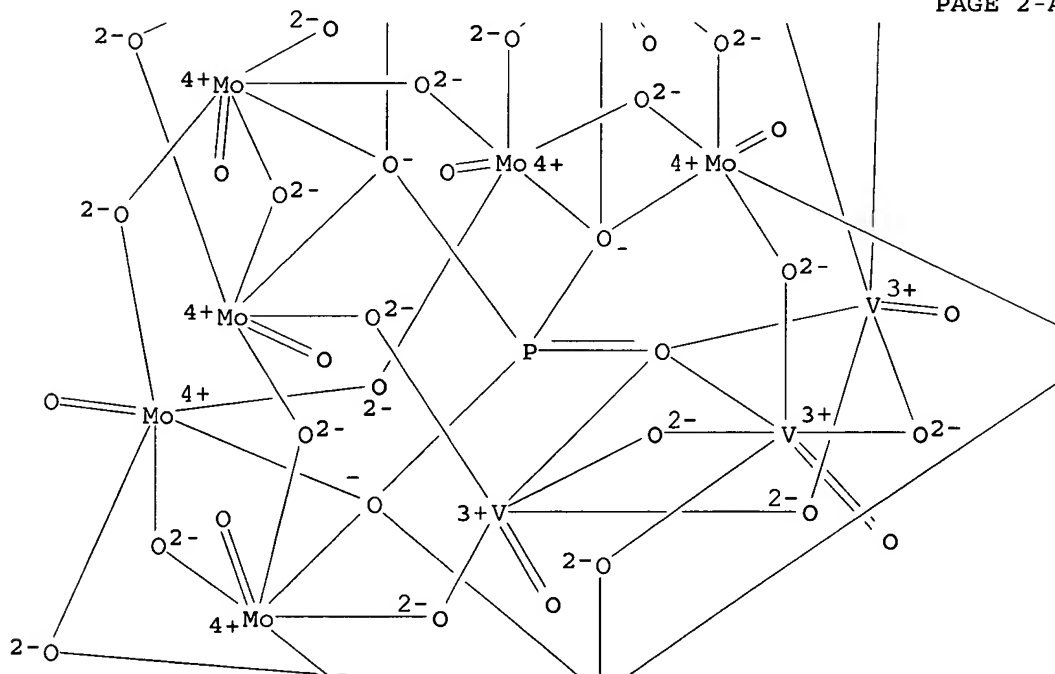
● 5 H<sup>+</sup>

RN 12293-24-2 HCAPLUS  
 CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaonamolybdate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



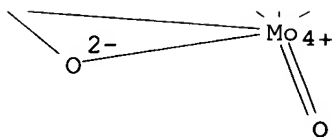
PAGE 2-A



PAGE 2-B



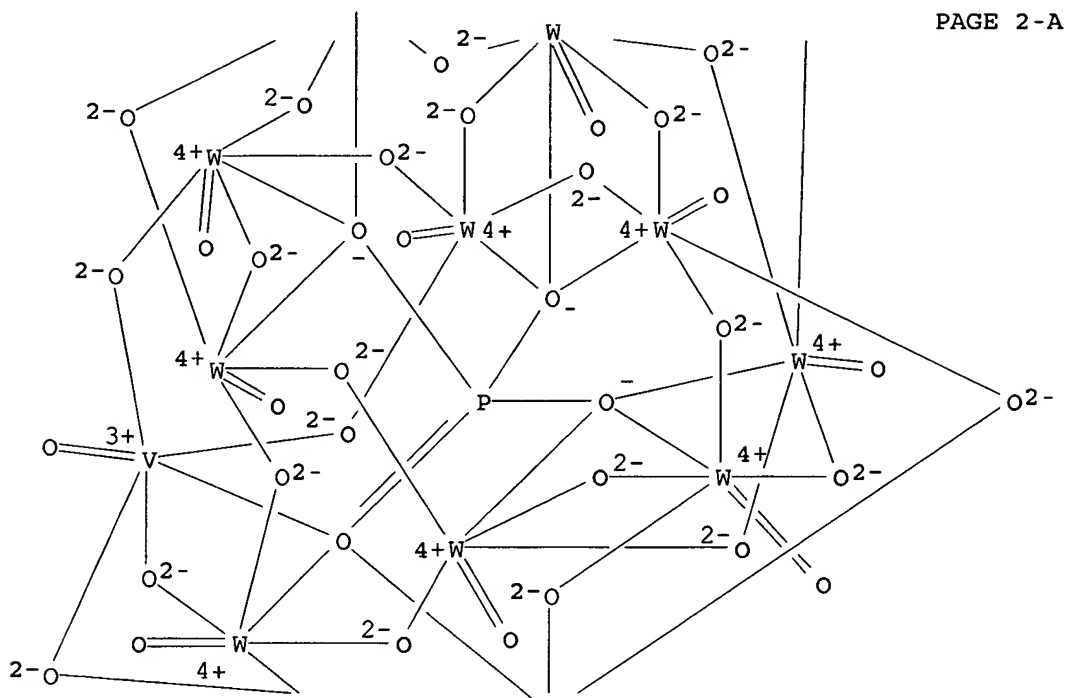
PAGE 3-A



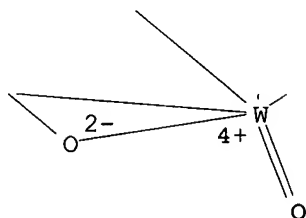
● 6 H<sup>+</sup>

[illegible]

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



PAGE 3-A

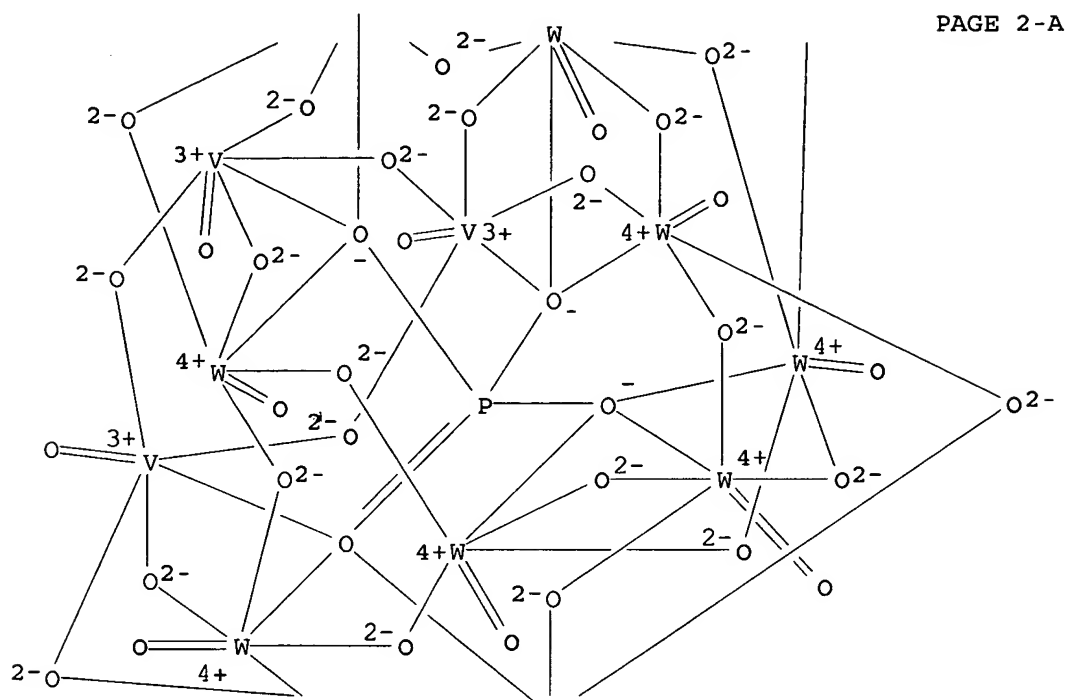
 $\bullet_4 \text{H}^+$ 

```

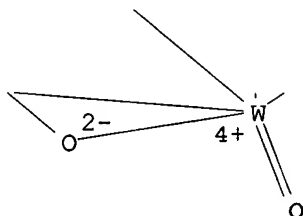
RN      12786-62-8   HCAPLUS
CN      Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-
        oxononaaxononatungstate) [μ12-[phosphato(3-)-
        κO:κO:κO:κO':κO':κO':κO'':.kappa
        .O'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen
        (9CI) (CA INDEX NAME)

```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



PAGE 3-A

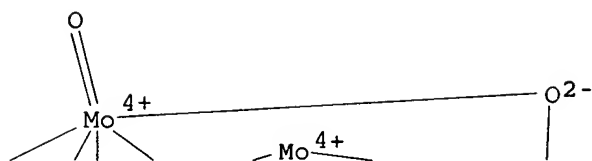
● 6 H<sup>+</sup>

```
RN      53749-36-3    HCAPLUS
CN      1-Butanaminium, N,N,N-tributyl-, tetracosam-μ-oxododecaoxo [μ12-
        [phosphato (3-) -κO:κO:κO:κO':κO':κO':.k
        appa.O'':κO'':κO'':κO'':κO'':κO'']] dodeca
        molybdate(3-) (3:1) (9CI) (CA INDEX NAME)
```

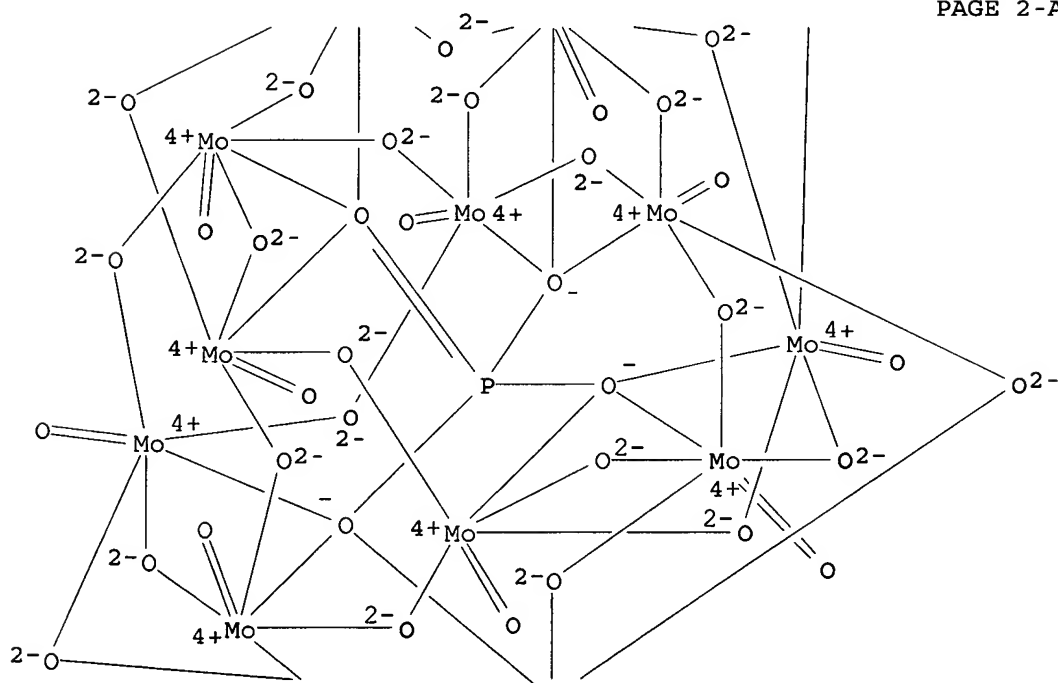
CM 1

CRN 12379-13-4  
CMF Mo12 040 P  
CCI CCS

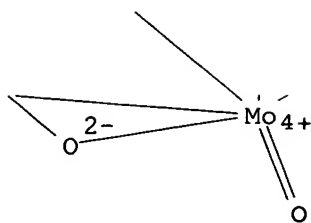
PAGE 1-A



PAGE 2-A





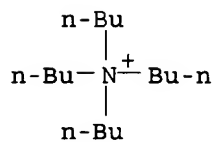


PAGE 3-A

CM 2

CRN 10549-76-5

CMF C16 H36 N



RN 53749-37-4 HCAPLUS

CN 1-Butanaminium, N,N,N-tributyl-, tetracosamolybdoxododecatungstate [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappaappa.O':κO':κO':κO':κO':κO']dodecatungstate(3-)] (3:1) (9CI) (CA INDEX NAME)

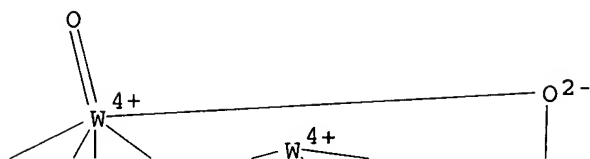
CM 1

CRN 12534-77-9

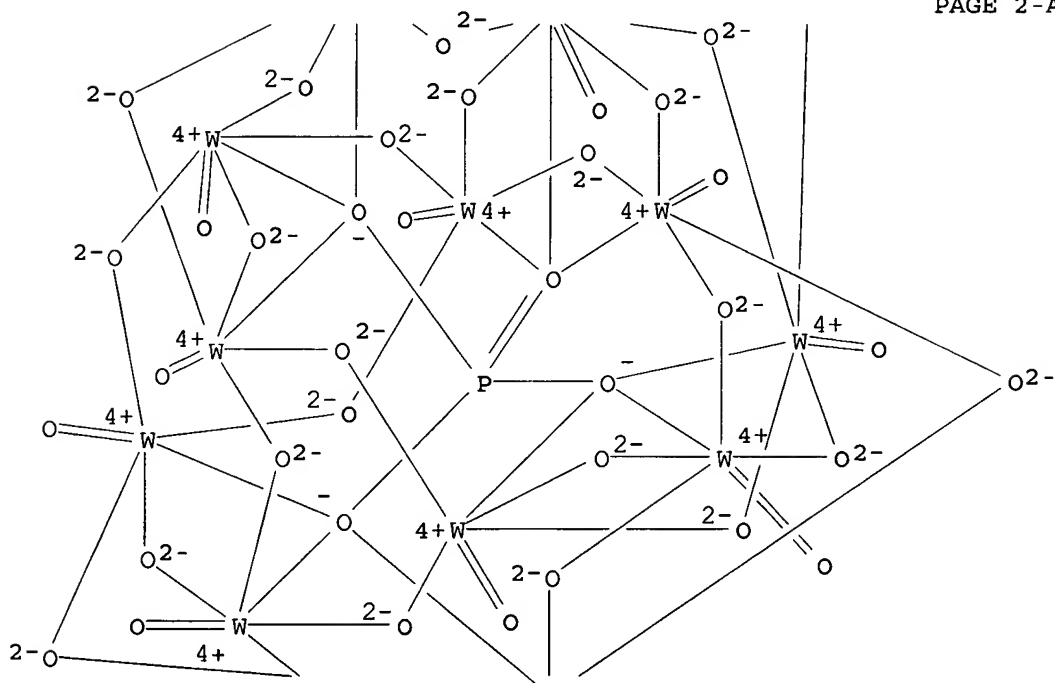
CMF O40 P W12

CCI CCS

PAGE 1-A

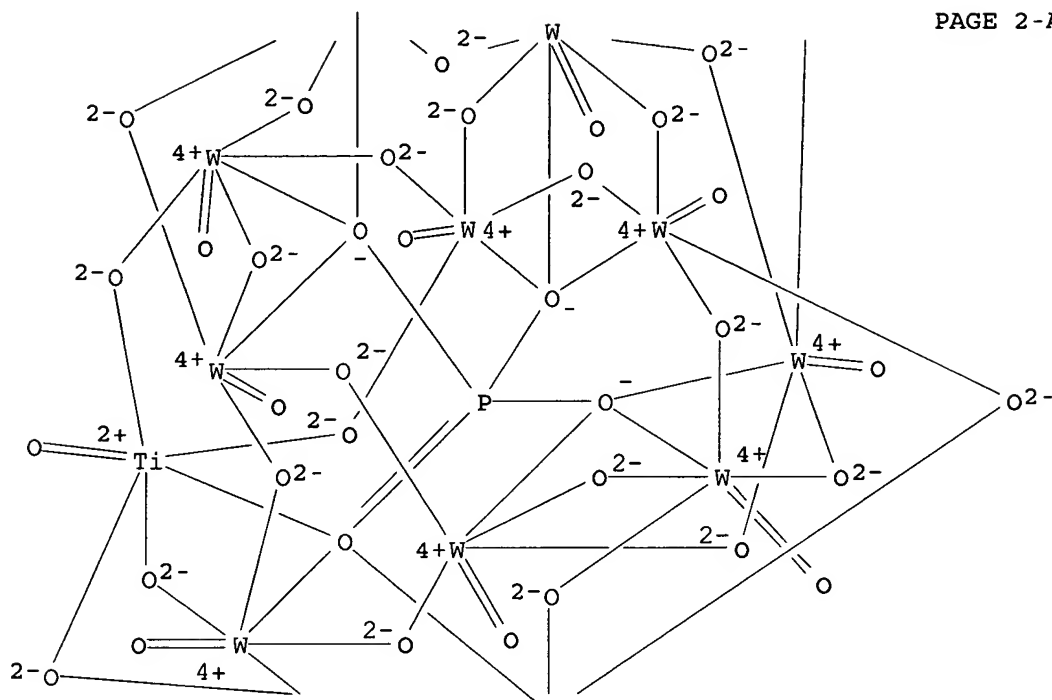


PAGE 2-A

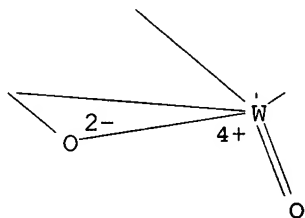




PAGE 2-A



PAGE 3-A

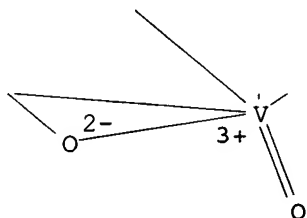
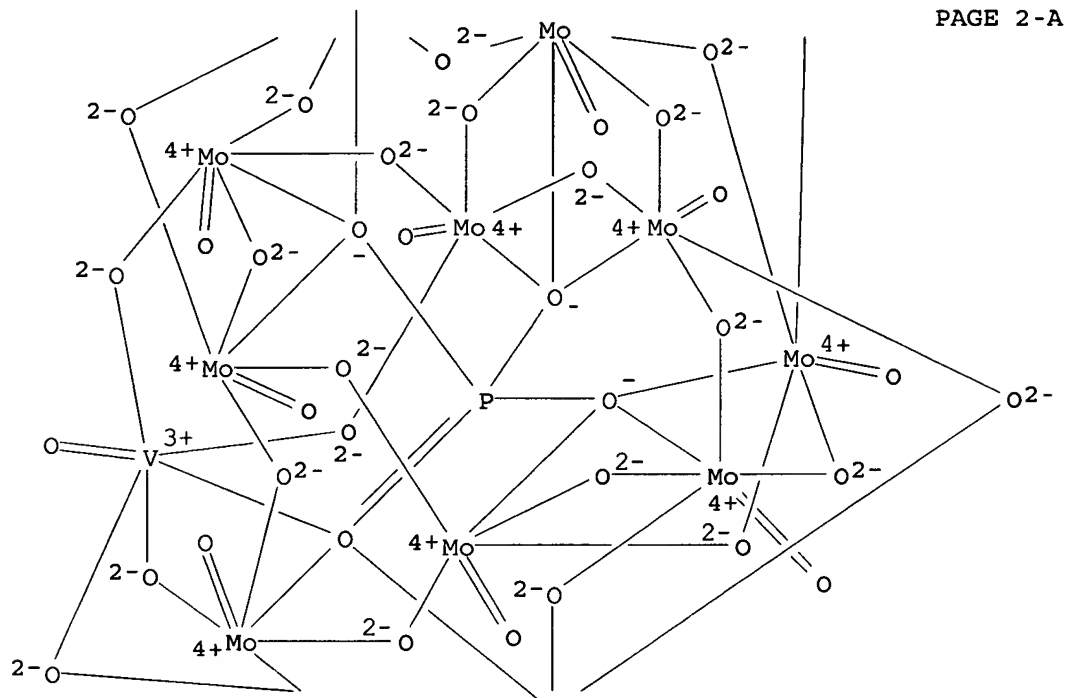
● 5 H<sup>+</sup>

RN 134360-58-0 HCAPLUS  
 CN 1-Butanaminium, N,N,N-tributyl-, (heptadeca-μ-  
 oxodecaoxodecamolybdate) hepta-μ-oxodioxo [μ12- [phosphato (3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO'']]divanadate(5-) (5:1)  
 (9CI) (CA INDEX NAME)

CM 1

CRN 58071-93-5  
 CMF Mo10 O40 P V2  
 CCI CCS

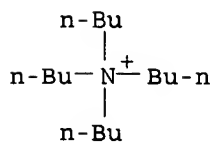
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



CM 2

CRN 10549-76-5

CMF C16 H36 N



RN 144839-08-7 HCAPLUS

CN 1-Butanaminium, N,N,N-tributyl-, (aquachromate)tetracosam- $\mu$ -oxoundeca-oxo [ $\mu$ 12-[phosphato(3-)- $\kappa$ O: $\kappa$ O: $\kappa$ O: $\kappa$ O']:.k

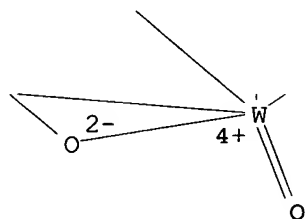
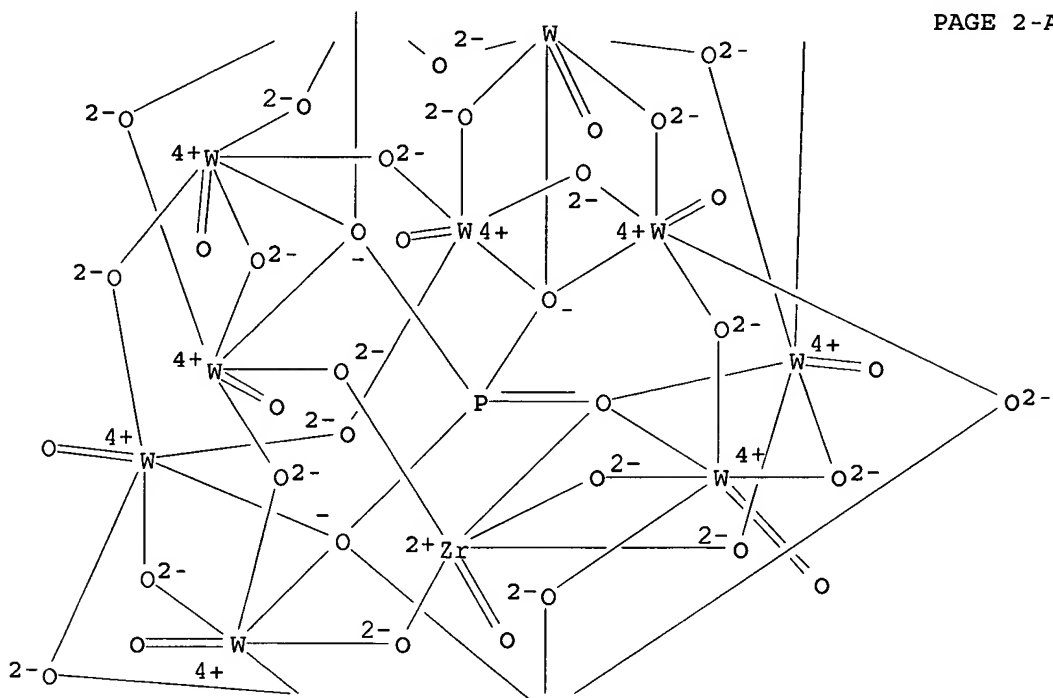
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505





a.O''']] -, pentahydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

● 5 H<sup>+</sup>

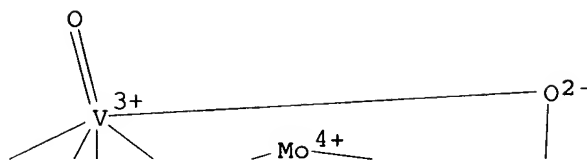
RN 200558-44-7 HCAPLUS  
 CN 1-Butanaminium, N,N,N-tributyl-, (eicosa-μ-  
 oxoundeca-oxoundecamolybdate)tetra-μ-oxooxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]vanadate(4-) (4:1)  
 (9CI) (CA INDEX NAME)

CM 1

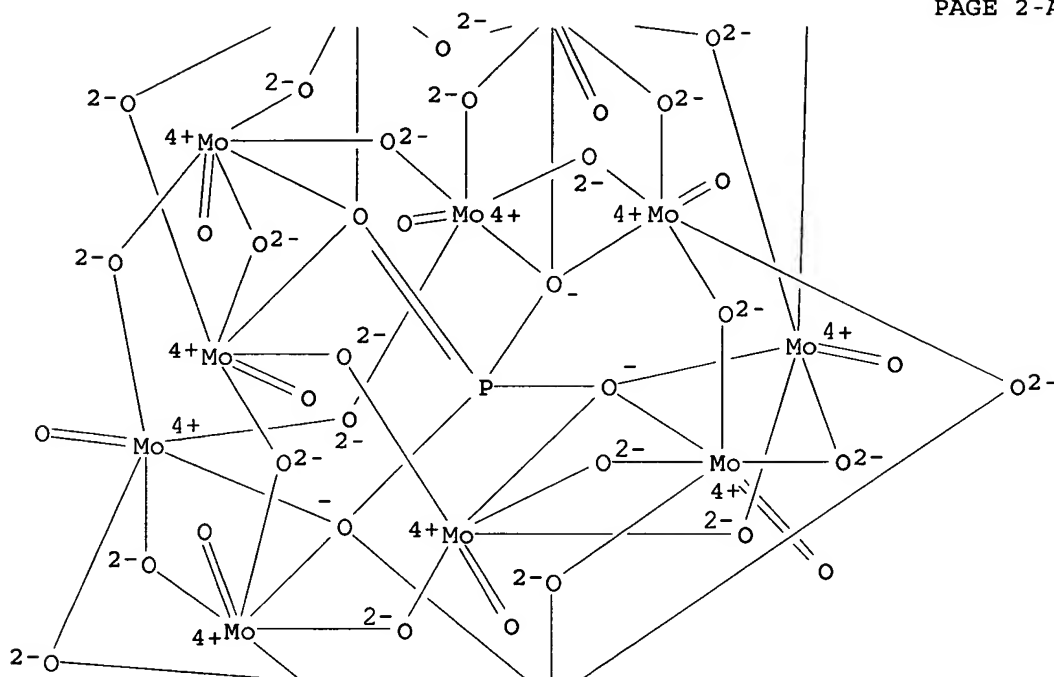


CRN 54578-48-2  
CMF Mo11 O40 P V  
CCI CCS

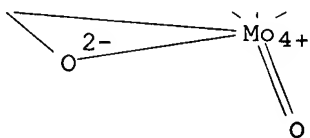
PAGE 1-A



PAGE 2-A



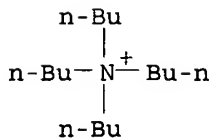
PAGE 3-A



CM 2

CRN 10549-76-5

CMF C16 H36 N



IT 12411-60-8P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

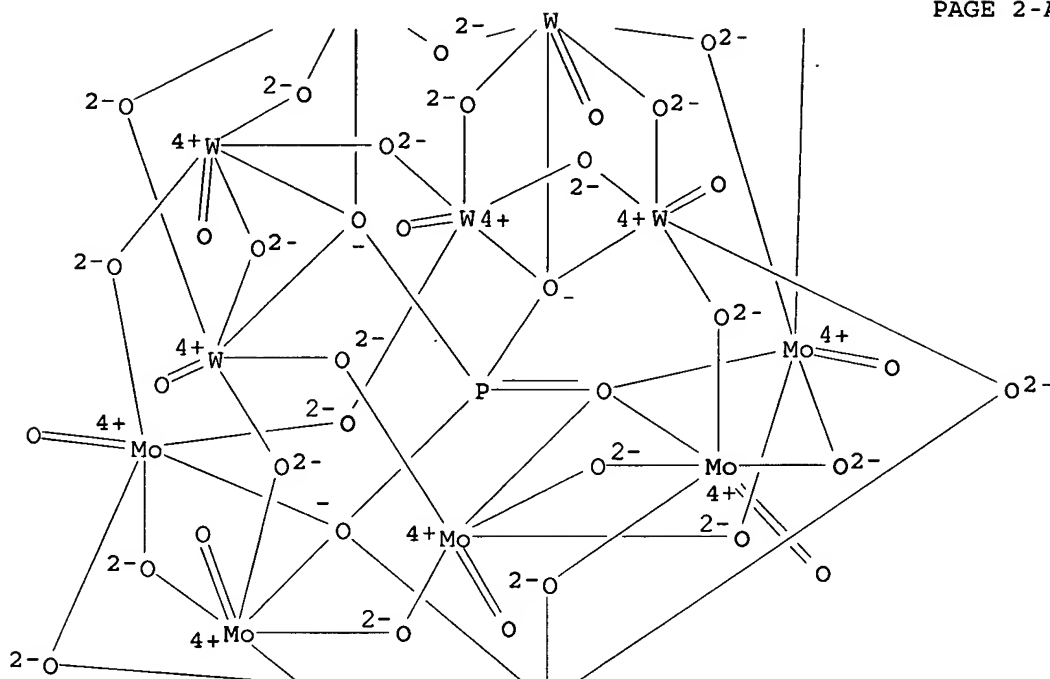
(oxidation of cyclohexane and cyclohexene by dioxygen reductively  
activated on platinum and heteropoly compds.)

RN 12411-60-8 HCAPLUS

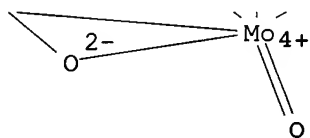
CN Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-



PAGE 2-A



PAGE 3-A

●3 H<sup>+</sup>

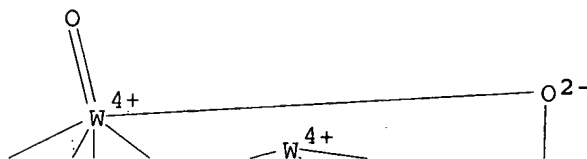
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 18 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:640819 HCAPLUS  
DN 140:84465  
TI The activity of TiO<sub>2</sub> and heteropolytungstate-modified TiO<sub>2</sub> in the photocatalytic degradation of aqueous cyanide  
AU Kim, Jae-Hyun; Lee, Ho-In  
CS School of Chemical Engineering, Seoul National University, Sillim-dong, Gwanak-gu, Seoul, 151-744, S. Korea  
SO Studies in Surface Science and Catalysis (2003), 145 (Science and Technology in Catalysis 2002), 161-164  
CODEN: SSCTDM; ISSN: 0167-2991  
PB Elsevier Science B.V.  
DT Journal  
LA English

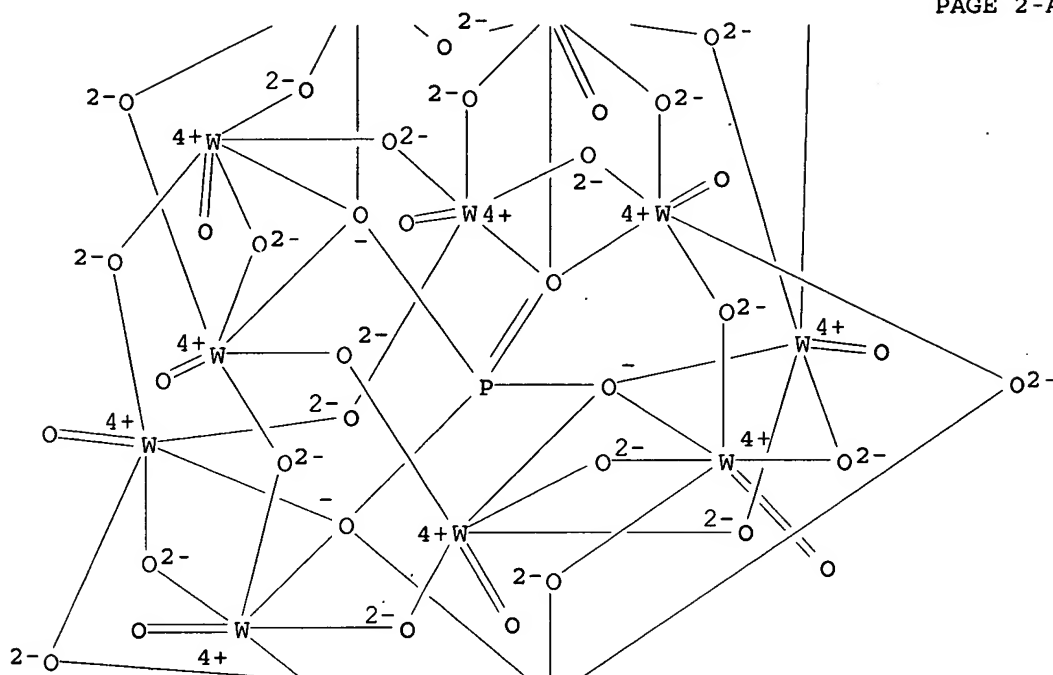
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

- AB Photocatalytic oxidation of cyanide in water was studied. In the presence of P25, cyanate was produced prior to the other products, and **nitrate** was mainly formed as the cyanate decomposed. Photo-oxidation of cyanide occurred even without dissolved oxygen suggesting that water mol. could be a source of oxygen. Tungstophosphoric acid-modified titania (TPA/TiO<sub>2</sub>) showed better activity than the corresponding pure titania. In the presence of OH radical scavenger such as iso-Pr alc. and bromide, the activity of TPA/TiO<sub>2</sub> was retarded less than that of pure titania suggesting that the possibility of another reaction mechanism, probably direct oxidation by electron transfer.
- CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 60
- IT 1343-93-7 13463-67-7, Titania, uses  
RL: CAT (Catalyst use); USES (Uses)  
(activity of TiO<sub>2</sub> and **heteropolytungstate**-modified TiO<sub>2</sub> in photocatalytic degradation of aqueous cyanide)
- IT 1343-93-7  
RL: CAT (Catalyst use); USES (Uses)  
(activity of TiO<sub>2</sub> and **heteropolytungstate**-modified TiO<sub>2</sub> in photocatalytic degradation of aqueous cyanide)
- RN 1343-93-7 HCAPLUS
- CN Tungstate(3-), tetracosam-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

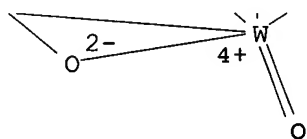
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 19 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:574606 HCAPLUS  
DN 140:67483  
TI Preparation, characterization, and photocatalytic activity of  
POM-APS-silica hybrid catalysts  
AU Li, Li; Guo, Yi-xing; Yang, Yu; Zhou, Ping; Jiang, Chun-jie  
CS Faculty of Chemistry and Chemical Engineering, Qiqihar University,  
Qiqihar, 16100, Peop. Rep. China  
SO Fenzi Kexue Xuebao (2003), 19(1), 33-39  
CODEN: JMOSE7; ISSN: 1000-9035  
PB Dongbei Shifan Daxue Xueshu Jikanshe  
DT Journal  
LA Chinese  
AB Amine-functionalized mesoporous silica materials impregnated with

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

transition- metal-monosubstituted polyoxometalate cluster,  $K_5[Ni(H_2O)PW_{11}O_{39}]$  ( $PW_{11}Ni$ ), were prepared by coordination of nickel centers in the cluster with the amine surface groups in silica supports. XRD, UV/DRS, FT - IR, ICP - AES, Elemental anal. were used to characterize the structure and composition of the composite, and the photocatalytic activity of the composite was studied through photocatalytic degradation of dye Rhodamine B(RB). The exptl. results indicated that the photocatalytic activity of the composite was higher than that of the direct photolysis and the pure  $PW_{11}Ni$  in the homogeneous system. Moreover, this kind of catalyst was insol., and it could be reused.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 919-30-2D, silica derivs. 7631-86-9, Silica, uses 37194-75-5

RL: CAT (Catalyst use); USES (Uses)

(polyoxometalate-amine-functionalized silica hybrid photocatalysts)

IT 37194-75-5

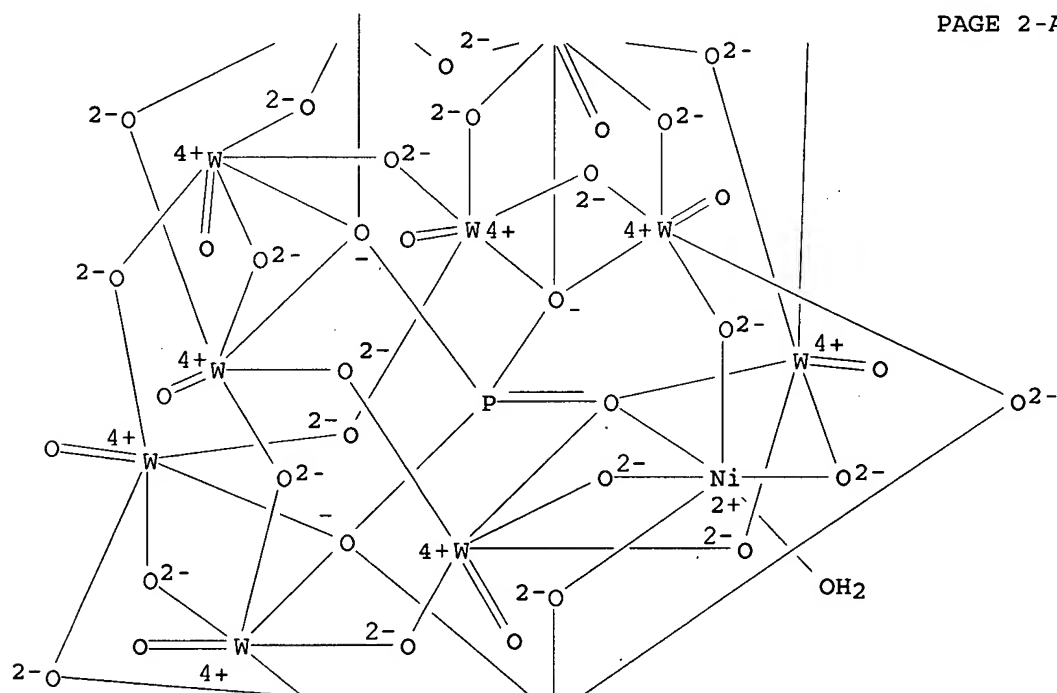
RL: CAT (Catalyst use); USES (Uses)

(polyoxometalate-amine-functionalized silica hybrid photocatalysts)

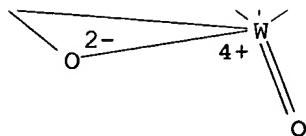
RN 37194-75-5 HCAPLUS

CN Tungstate(5-), (aquanickelate)tetracosam-oxoundeca-oxo[ $\mu_{12}$ -[phosphato(3-)- $\kappa O:\kappa O:\kappa O:\kappa O':\kappa O':\kappa O'$ .ka ppa.O''': $\kappa O''':\kappa O''':\kappa O''':\kappa O''':\kappa O''':\kappa O'''$ ]]undeca-, pentapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 3-A

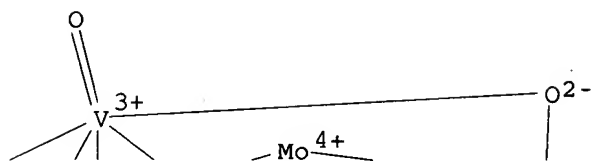
● 5 K<sup>+</sup>

- L32 ANSWER 20 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2003:541838 HCAPLUS  
 DN 139:365251  
 TI Role of acid and redox properties on propane oxidative dehydrogenation over polyoxometalates  
 AU Dimitratos, Nikolaos; Vedral, Jacques C.  
 CS Leverhulme Centre for Innovative Catalysis, Department of Chemistry, University of Liverpool, Liverpool, L69 7ZD, UK  
 SO Catalysis Today (2003), 81(4), 561-571  
 CODEN: CATTEA; ISSN: 0920-5861  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 AB Cs<sub>2</sub>.5H<sub>11</sub>.5PV<sub>1</sub>Mo<sub>11</sub>O<sub>40</sub> heteropolyoxometalate compds. were studied for propane oxidative dehydrogenation (ODH) in the 340-400° temperature range. Their redox and Bronsted acid properties were tuned by introducing a redox metal element M such as Co<sup>II</sup>, Fe<sup>III</sup>, Ga<sup>III</sup>, Ni<sup>II</sup>, Sb<sup>III</sup> or Zn<sup>II</sup> in a V:M atom ratio equal to 1:1. This introduction was carried out either directly in the synthesis solution or by usual aqueous cationic exchange of protons of the solid Cs salt. TGA and FT-IR analyses allowed us to determine the extent of metal M substitution for Mo<sup>VI</sup> in the Keggin anion and proton replacement by the M cation. , Under catalytic conditions (C<sub>3</sub>:O<sub>2</sub>:He=2:1:2, flow rate 15 cm<sup>3</sup> min<sup>-1</sup>, 12 h on stream), the catalysts were stable, with only a small part of the substituted elements (V and/or M) being extracted from the Keggin anion during the reaction. The presence of these metal M cations enabled us to tune the redox and acid properties of the material and to get high selectivity for propene (60-80% at 5 and 10% propane conversion) at a relatively low temperature (300-400 °C). The direct synthesis method was found more efficient than the classical cationic exchange technique for propane ODH.  
 CC 35-2 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 67  
 IT 1309-64-4, Antimony oxide, reactions 7779-88-6, Zinc nitrate 10421-48-4, Iron nitrate (Fe(NO<sub>3</sub>)<sub>3</sub>) 13138-45-9 , Nickel nitrate 13494-90-1, Gallium nitrate (Ga(NO<sub>3</sub>)<sub>3</sub>) 14024-48-7, Cobalt(2+) bis(acetylacetonate)  
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
 (effects of metals on redox properties of molybdenum-containing polyoxometalates in catalytic propane oxidative dehydrogenation)  
 IT 12293-15-1 200941-26-0  
 RL: CAT (Catalyst use); USES (Uses)  
 (preps. of molybdenum-containing polyoxometalates for propane oxidative dehydrogenation and the redox properties thereof)  
 IT 10421-48-4, Iron nitrate (Fe(NO<sub>3</sub>)<sub>3</sub>) 13138-45-9 , Nickel nitrate

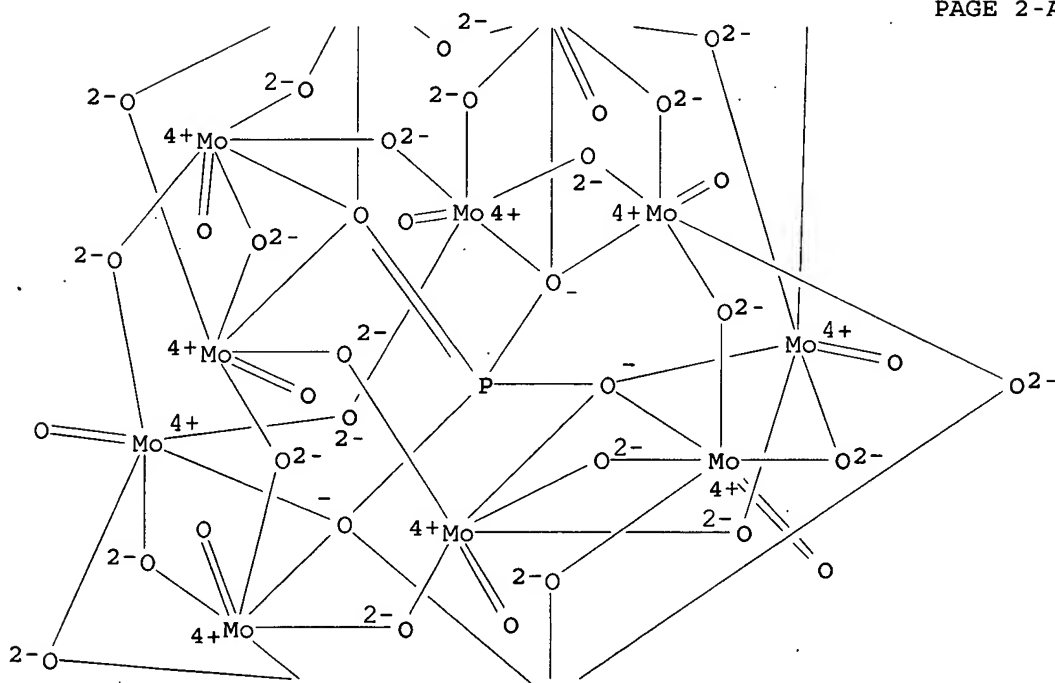


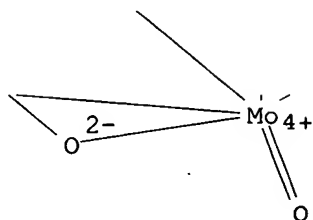


PAGE 1-A



PAGE 2-A





PAGE 3-A

● 4 H<sup>+</sup>

RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

- L32 ANSWER 21 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:472227 HCAPLUS  
DN 139:267844  
TI Synergistic effect of Keggin-type [Xn+W11O39] (12-n)- and TiO<sub>2</sub> in  
macroporous hybrid materials [Xn+W11O39] (12-n)--TiO<sub>2</sub> for the  
photocatalytic degradation of textile dyes  
AU Yang, Yu; Guo, Yihang; Hu, Changwen; Jiang, Chunjie; Wang, Enbo  
CS Faculty of Chemistry, Institute of Polyoxometalate Chemistry, Northeast  
Normal University, Changchun, 130024, Peop. Rep. China  
SO Journal of Materials Chemistry (2003), 13(7), 1686-1694  
CODEN: JMACEP; ISSN: 0959-9428  
PB Royal Society of Chemistry  
DT Journal  
LA English  
AB Macroporous titania materials functionalized with monovacant Keggin-type  
polyoxometalates (POMs) [Xn+W11O39] (12-n)- (XW11; Xn+ = P5+, Si4+, Ge4+)  
were prepared by the sol-gel as well as the template technique. Lacunary  
XW11 clusters were incorporated into wall structures of macroporous  
titania, resulting in the formation of hybrid titania materials. The  
structural integrity of the XW11 clusters in the composites was  
characterized by UV diffuse reflectance spectra (UV/DRS), IR spectra,  
inductively coupled plasma atomic emission spectrometry (ICP-AES), 31P MAS  
NMR spectroscopy and thermogravimetric anal. (TGA). These investigations  
indicated that the primary lacunary Keggin structures remained intact in  
the hybrid composites. The porous structure of the composites was  
demonstrated via SEM and N<sub>2</sub> adsorption-desorption isotherms, with the pore  
diams. in the range of 300 to 450 nm. The photocatalytic performances of  
the as-synthesized composites were evaluated by the degradation of aqueous textile  
dyes such as Rhodamine B, Methyl orange and Erythrosine B. S., and the  
intermediates and the final products of the degradation of Rhodamine B were  
detected by electrospray mass spectrometer (ES-MS) and ion chromatog.  
(IC). The as-synthesized composites showed much higher photocatalytic  
activity than pure TiO<sub>2</sub> and pure POMs, which has been attributed to the  
synergistic effect resulting from the combination of POMs and TiO<sub>2</sub>.  
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)  
Section cross-reference(s): 40, 41, 67  
IT 13463-67-7D, Titania, surface reaction product with polyoxometalates  
87261-30-1D, Sodium tungstophosphate (Na<sub>7</sub>PW<sub>11</sub>O<sub>39</sub>), surface reaction  
product with titania 153829-13-1D, surface reaction product with titania  
153829-14-2D, surface reaction product with titania  
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical

process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)

(macroporous hybrid TiO<sub>2</sub> photocatalysts functionalized with monovacant Keggin-type polyoxometalates for photodegrdn. of textile dyes)

IT 124-38-9P, Carbon dioxide, properties 14797-55-8P, Nitrate ion, properties 14798-03-9P, Ammonium ion, properties 16887-00-6P, Chloride, properties

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

(photoproduct; mechanism of photocatalytic degradation of Rhodamine B on macroporous hybrid TiO<sub>2</sub> photocatalysts functionalized with monovacant Keggin-type polyoxometalates)

IT 87261-30-1D, Sodium tungstophosphate (Na<sub>7</sub>PW<sub>11</sub>O<sub>39</sub>), surface reaction product with titania

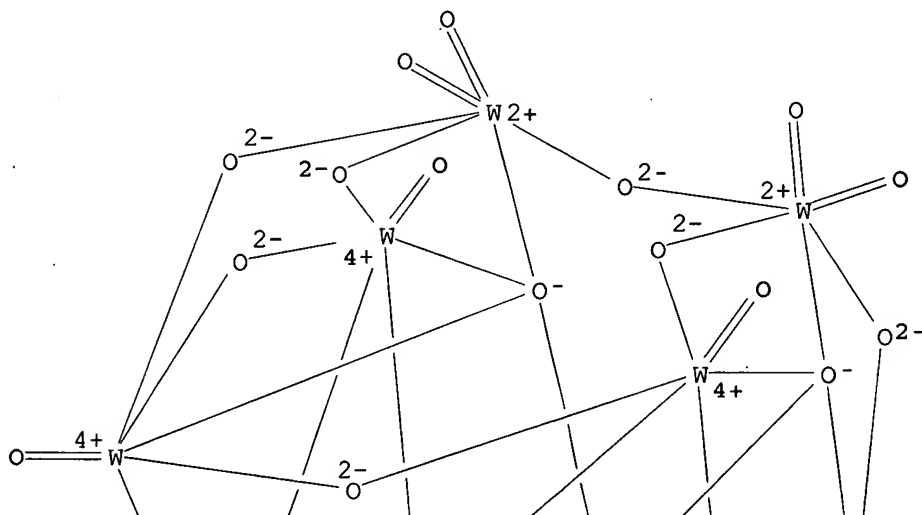
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)

(macroporous hybrid TiO<sub>2</sub> photocatalysts functionalized with monovacant Keggin-type polyoxometalates for photodegrdn. of textile dyes)

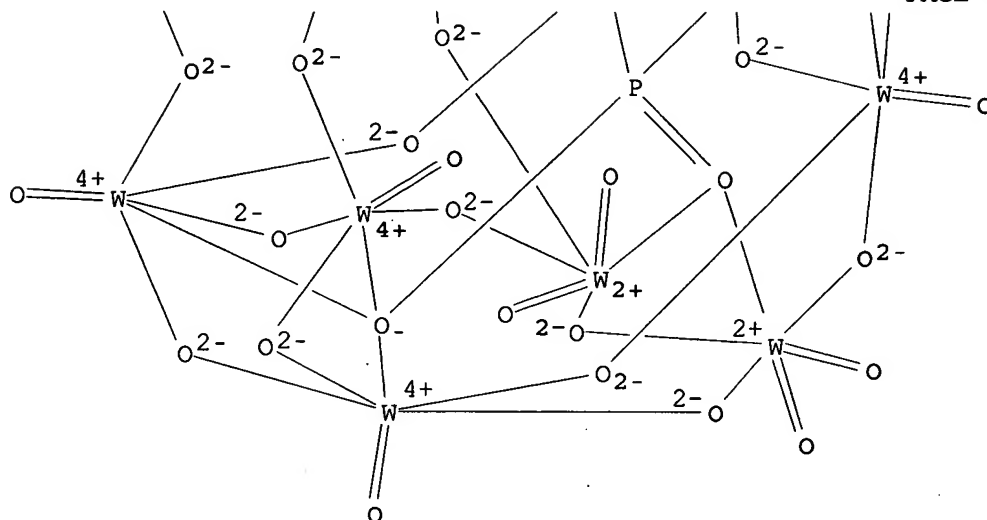
RN 87261-30-1 HCAPLUS

CN Tungstate(7-), eicosa-μ-oxopentadeca-oxo[μ<sub>11</sub>-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'']]undeca-, heptasodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



PAGE 3-A

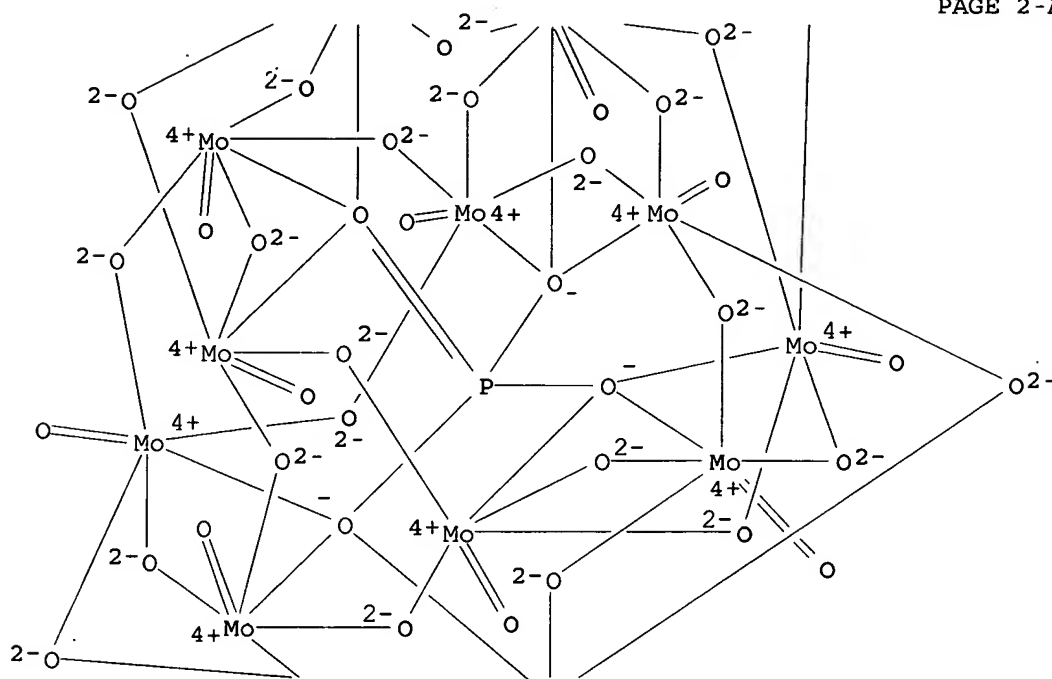
● 7 Na<sup>+</sup>

RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

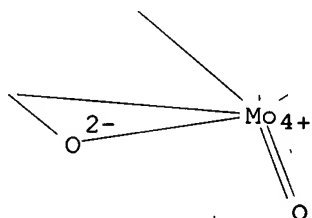
L32 ANSWER 22 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:453438 HCAPLUS  
DN 139:103310  
TI FePMo12O40 heteropoly-compound in preparation of hydrodesulfurization catalysts  
AU Spojakina, Alla A.; Kraleva, Elka U.; Jiratova, Kveta; Kocianova, Jana; Petrov, Lachezar A.  
CS Inst. of Catalysis, Bulgarian Acad. of Sci., Sofia, 1113, Bulg.  
SO Bulgarian Chemical Communications (2002), 34(3/4), 495-504  
CODEN: BCHCE4; ISSN: 0324-1130  
PB Bulgarian Academy of Sciences and the Bulgarian Chemical Society  
DT Journal  
LA English  
AB TiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> supported catalysts with Mo loading 6 and 12 weight% have been prepared using Fe salt of H<sub>3</sub>PMo<sub>12</sub>O<sub>40</sub> heteropolyacid and characterized by IR spectroscopy and TPR. Catalysts have been tested in the thiophene hydrodesulfurization. The support affects the phase composition of catalyst precursors as result of interaction between supported compound and support itself. Analogs of titanium heteropolyacid on TiO<sub>2</sub> and aluminum heteropoly-molybdate on Al<sub>2</sub>O<sub>3</sub> are formed being precursors of active sites in the thiophene hydrodesulfurization. Iron increases Mo reducibility on alumina and decreases it on TiO<sub>2</sub> supported catalysts. Iron promoting effect is observed in both, the alumina and titania samples increasing two times HDS activity. Iron promoting effect on TiO<sub>2</sub>-supported samples overlaps with promoting role of TiO<sub>2</sub> itself at the lower Mo concentration  
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)  
Section cross-reference(s): 67  
IT 7439-98-7, Molybdenum, uses 12263-11-5



PAGE 2-A



PAGE 3-A



● Fe(III) 3+

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 23 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2003:360958 HCAPLUS  
DN 139:117137  
TI A Water-Soluble and "Self-Assembled" Polyoxometalate as a Recyclable  
Catalyst for Oxidation of Alcohols in Water with Hydrogen Peroxide  
AU Sloboda-Rozner, Dorit; Alsters, Paul L.; Neumann, Ronny  
CS Department of Organic Chemistry, Weizmann Institute of Science, Rehovot,  
76100, Israel  
SO Journal of the American Chemical Society (2003), 125(18),  
5280-5281  
CODEN: JACSAT; ISSN: 0002-7863  
PB American Chemical Society

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

DT Journal  
LA English  
OS CASREACT 139:117137  
AB A water-soluble polyoxometalate,  $\text{Na}_{12}[\text{WZnZn}_2(\text{H}_2\text{O})_2(\text{ZnW}_9\text{O}_{34})_2]$ , synthesized from readily available zinc **nitrate** and sodium tungstate in the presence of nitric acid, is an effective catalyst for the preparation of ketones and carboxylic acids by selective alc. oxidation with hydrogen peroxide in biphasic (water-alc.) reaction media. Carboxylic acids are obtained by oxidation of primary alcs. with hydrogen peroxide in the presence of  $\text{Na}_{12}[\text{WZnZn}_2(\text{H}_2\text{O})_2(\text{ZnW}_9\text{O}_{34})_2]$ ; addition of catalytic amts. of TEMPO to oxidation mixts. yields increased proportions of the aldehyde in addition to the carboxylic acid. Secondary alcs. are oxidized in preference to primary alcs. to give ketones; carbon-carbon bond cleavage byproducts are seen in one case. The catalyst generated in situ is as active as the isolated catalyst; in addition, the catalyst can be separated and recycled without losses in either selectivity or in activity.

CC 23-15 (Aliphatic Compounds)  
Section cross-reference(s): 78

IT 7779-88-6, Zinc **nitrate** 13472-45-2, Sodium tungstate  
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
(preparation of a zinc-tungsten polyoxometalate from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)

IT 188746-62-5P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation of a zinc-tungsten polyoxometalate from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)

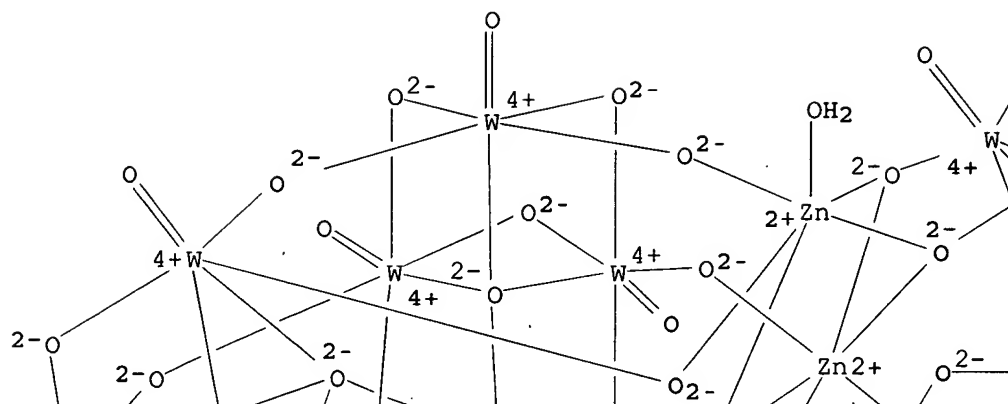
IT 7697-37-2, Nitric acid, reactions  
RL: RGT (Reagent); RACT (Reactant or reagent)  
(preparation of a zinc-tungsten polyoxometalate from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)

IT 188746-62-5P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation of a zinc-tungsten polyoxometalate from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)

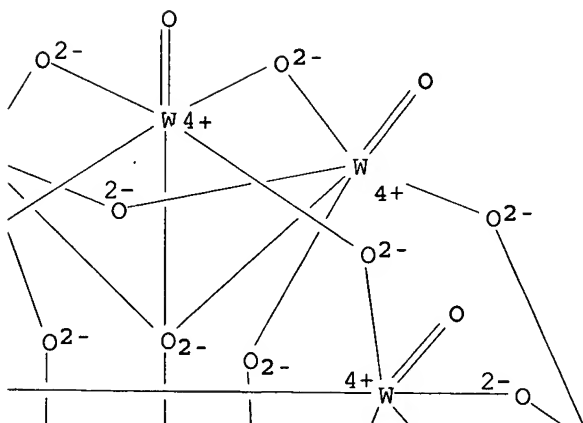
RN 188746-62-5 HCAPLUS  
CN Tungstate(12-), (diaquapentazincate)octatriaconta- $\mu$ -oxotetra- $\mu$ 3-oxoocta- $\mu$ 4-oxooctadecaaxononadeca-, dodecasodium (9CI) (CA INDEX NAME)

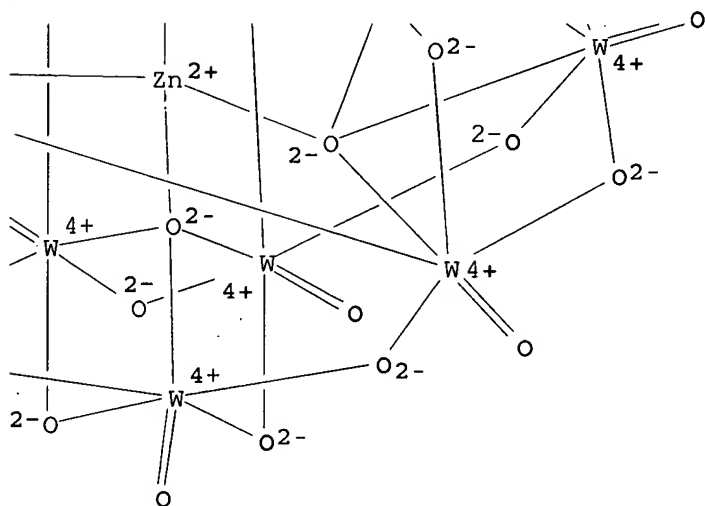
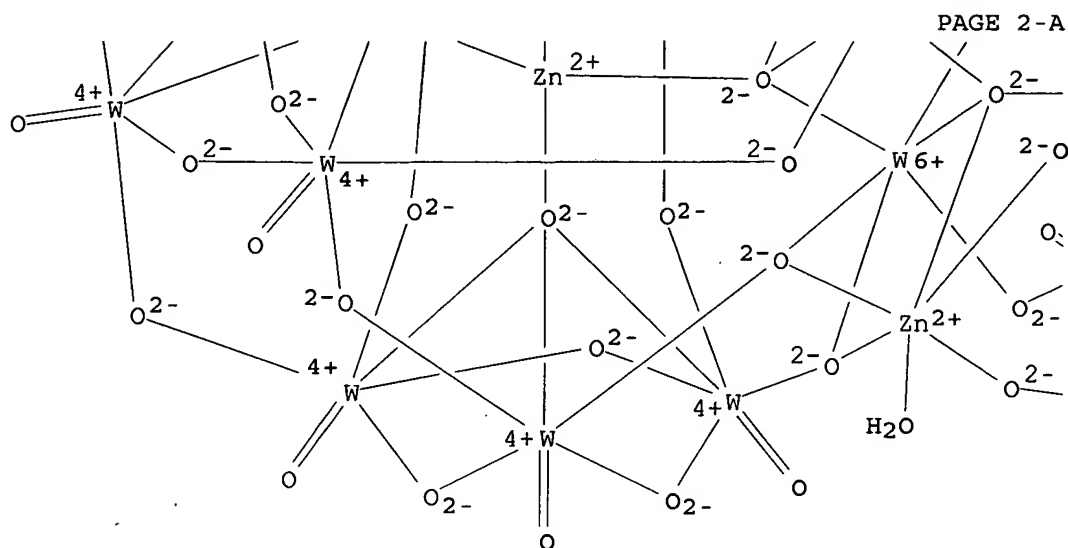


PAGE 1-A



PAGE 1-B





● 12 Na<sup>+</sup>

RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 24 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:211981 HCAPLUS

DN 139:52725

TI Solvent-free and selective oxidation of hydroxy groups to their corresponding carbonyl functions with ferric nitrate activated by heteropoly acids

AU Firouzabadi, Habib; Iranpoor, Nasser; Amani, Kamal

CS Department of Chemistry, Shiraz University, Shiraz, 71454, Iran

SO Synthesis (2003), (3), 408-412

CODEN: SYNTBF; ISSN: 0039-7881

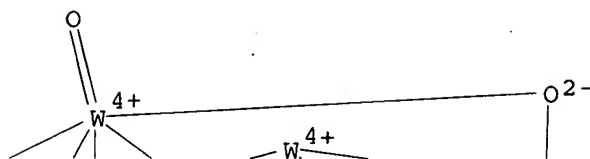
PB Georg Thieme Verlag

DT Journal

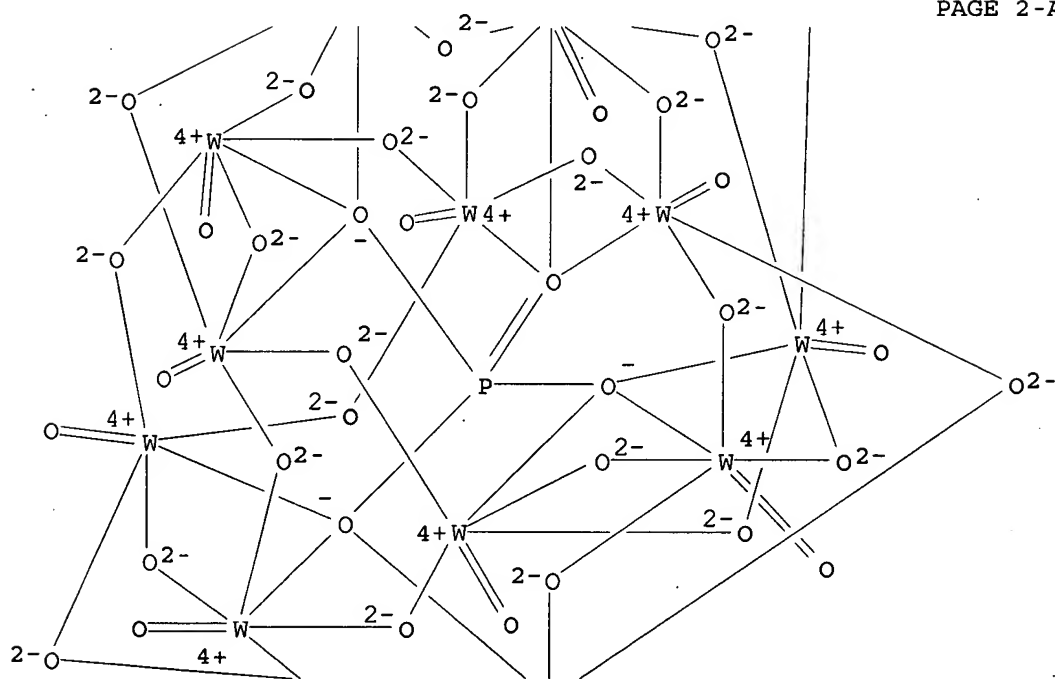
- LA English  
OS CASREACT 139:52725  
AB Keggin-type heteropoly acids revealed high catalytic activity for swift and chemoselective oxidation of various aromatic alcs., e.g. PhCh<sub>2</sub>OH, to the corresponding carbonyl compds., e.g. PhCHO, using ferric **nitrate** as an oxidant under mild and solvent-free conditions. The catalytic activities of the heteropoly acids were much higher than mineral or solid acids such as sulfuric acid, p-toluenesulfonic acid, triflic acid, acidic Amberlyst-15, Montmorillonite-K10 clay, and HY-zeolite.  
CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 22  
ST carbonyls synthesis solvent free chemoselective oxidn arom alc; ferric **nitrate** heteropoly acid catalyst selective oxidn carbonyls synthesis; zeolite catalyst solvent effect chemoselective oxidn arom carbonyls synthesis  
IT Alcohols, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(aralkyl; synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)  
IT Carbonyl compounds (organic), preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(aromatic; synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)  
IT Oxidation catalysts  
(selective; synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)  
IT Oxidation  
Solvent effect  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)  
IT Heteropoly acids  
Zeolite HY  
RL: CAT (Catalyst use); USES (Uses)  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)  
IT 104-15-4, p-Toluene sulfonic acid, uses 144-62-7, Oxalic acid, uses 1318-93-0, Montmorillonite ((Al<sub>1.33</sub>-1.67Mg<sub>0.33</sub>-0.67)(Ca<sub>0</sub>-1Na<sub>0</sub>-1)0.33Si<sub>4</sub>(OH)2O10.xH<sub>2</sub>O), uses 1343-93-7 1493-13-6, Triflic acid 7664-93-9, Sulfuric acid, uses 9037-24-5, Amberlyst 15 10213-10-2 12026-92-5 12027-43-9 12315-47-8 12501-23-4 60646-64-2  
RL: CAT (Catalyst use); USES (Uses)  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)  
IT 60-12-8, β-Phenyl ethanol 90-01-7, 2-Hydroxy benzyl alcohol 91-01-0, Diphenyl methanol 93-54-9, 1-Phenyl 1-propanol 93-56-1, Phenyl glycol 98-85-1 100-51-6, Benzylic alcohol, reactions 105-13-5, 4-Methoxy benzyl alcohol 111-87-5, 1-Octanol, reactions 119-53-9 122-97-4, γ-Phenyl propyl alcohol 123-96-6, 2-Hydroxy octane 589-18-4, 4-Methyl benzyl alcohol 611-71-2 612-25-9, 2-Nitro benzyl alcohol 873-76-7, 4-Chloro benzyl alcohol 1632-68-4, Norborneol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate**

- activated by heteropoly acids)
- IT 7631-99-4, Sodium **nitrate**, reactions 7782-61-8, Iron (III) **nitrate** nonahydrate 7789-02-8, Chromium (III) **nitrate** nonahydrate 10035-06-0, Bismuth (III) **nitrate** pentahydrate 10196-18-6, Zinc **nitrate** hexahydrate 13446-18-9, Magnesium **nitrate** hexahydrate 13478-38-1, Copper (II) **nitrate** hexahydrate 13746-89-9, Zirconium **nitrate** 15078-94-1, Cerium ammonium **nitrate**
- RL: RGT (Reagent); RACT (Reactant or reagent)  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
- IT 90-02-8P, 2-Hydroxy benzaldehyde, preparation 93-55-0P, Phenyl ethyl ketone 98-86-2P, Acetophenone, preparation 100-52-7P, Benzaldehyde, preparation 104-53-0P, Benzene propanal 104-87-0P, 4-Methyl benzaldehyde 104-88-1P, 4-Chloro benzaldehyde, preparation 111-13-7P, Hexyl methyl ketone 119-61-9P, Benzophenone, preparation 122-78-1P, Phenyl acetaldehyde 123-11-5P, 4-Methoxy benzaldehyde, preparation 124-13-0P, Octanal 134-81-6P, Dibenzoyl 497-38-1P, Norcamphor 552-89-6P, 2-Nitro benzaldehyde 582-24-1P, Benzoyl methanol 611-73-4P
- RL: SPN (Synthetic preparation); PREP (Preparation)  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
- IT 1343-93-7
- RL: CAT (Catalyst use); USES (Uses)  
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
- RN 1343-93-7 HCAPLUS
- CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

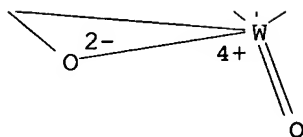
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 25 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:166974 HCAPLUS

DN 138:221456

TI Preparation of olefin oxidation products using heteropoly acid catalysts

IN Furuya, Masahiko; Nakashima, Hitoshi

PA Asahi Kasei Corporation, Japan; Noguchi Research Institute

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003064007	A2	20030305	JP 2001-258538	20010828 <--
PRAI	JP 2001-258538		20010828 <--		

AB The products are prepared by oxidation of olefins by mol. O in the presence of heteropoly acid catalysts containing rare earth elements, Group IVB, VB, VIB, or VIIB elements, Ni, Pd, Ir, or Pt in their double defects. Cyclooctene was oxidized by O in dichloroethane-MeCN mixture in the presence of Y-substituted tetrabutylammonium tungstosilicate (preparation given) at 75° for 75 h to give cyclooctene oxide with 86% selectivity at 20% conversion.

IC ICM C07C027-12

ICS B01J023-30; B01J023-652; B01J023-85; C07B033-00; C07C029-50; C07C035-08; C07C035-20; C07C045-34; C07C049-403; C07C049-413; C07C409-14; C07D301-06; C07D303-06; C07B061-00

CC 27-2 (Heterocyclic Compounds (One Hetero Atom))

IT 1941-27-1DP, Tetrabutylammonium **nitrate**, reaction products with decatungstosilicic acid and transition metal salts 7550-45-0DP, Titanium tetrachloride, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 10102-05-3DP, Palladium dinitrate, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 10361-92-9DP, Yttrium trichloride, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 12645-45-3DP, Iridium chloride, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 13138-45-9DP, Nickel dinitrate, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 16941-12-1DP, Chloroplatinic acid, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 37349-30-7DP, Niobic acid, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 102073-48-3DP, reaction products with rare earth and transition metal salts and tetrabutylammonium **nitrate**

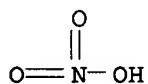
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)  
(catalyst; preparation of olefin oxidation products using heteropoly acid catalysts)

IT 13138-45-9DP, Nickel dinitrate, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate**  
102073-48-3DP, reaction products with rare earth and transition metal salts and tetrabutylammonium **nitrate**  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(catalyst; preparation of olefin oxidation products using heteropoly acid catalysts)

RN 13138-45-9 HCAPLUS

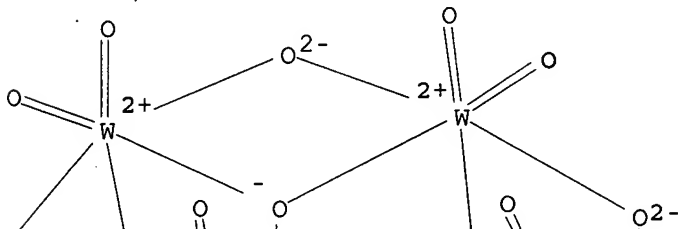
CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)



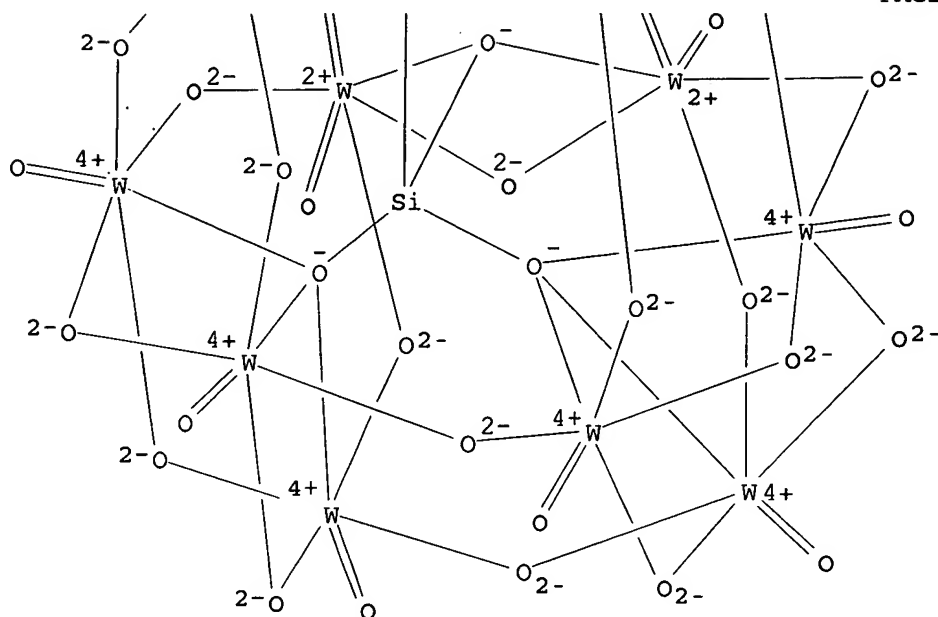
●<sub>1/2</sub> Ni (II)

RN    102073-48-3   HCAPLUS  
CN   Tungstate(8-), [μ<sub>10</sub>-[orthosilicato(4-)·κO:κO:κO:kapp  
   a.O':κO':κO':κO'':κO'':κO''':κO''']]oc  
tadeca-μ-oxotetradeca-oxodeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



PAGE 3-A

● 8 K<sup>+</sup>

L32 ANSWER 26 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:599245 HCAPLUS

DN 137:300442

TI Catalytic systems based on platinum and heteropoly compounds for oxidation of hydrocarbons with a dioxygen-dihydrogen gaseous mixture

AU Kirillova, N. V.; Kuznetsova, N. I.; Kuznetsova, L. I.; Likholobov, V. A.

CS G. K. Boreskov Institute of Catalysis, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, 630090, Russia

SO Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2002), 51(6), 975-981

CODEN: RCBUEY; ISSN: 1066-5285

PB Kluwer Academic/Consultants Bureau

DT Journal

LA English

AB The oxidation of cyclohexane, saturated and aromatic hydrocarbons with an O<sub>2</sub>-H<sub>2</sub> gaseous mixture was applied to study the catalytic properties of bicomponent systems based on platinum and heteropoly compds. (HPC). The consumption of gases and the yield of the products depend on the surface area, accessibility of the platinum species to the reactant, and compn of the HPC. The solid Pt samples suspended in an HPC solution, the Pt(5%)-PMo<sub>12</sub>/Al<sub>2</sub>O<sub>3</sub> bicomponent supported system, and the solid bicomponent sample prepared from the [Pt(NH<sub>3</sub>)<sub>4</sub>][H<sub>2</sub>PMo<sub>12</sub>O<sub>40</sub>]·2.7H<sub>2</sub>O complex salt were used as catalysts. Among the catalysts with the same molar compns. of the active components, the bicomponent materials are much more active in the oxidation than a combination of the Pt catalyst with an HPC solution. The bulk catalyst is a crystalline solid substance with the HPC structure with incorporated Pt species. Molybdenum is predominantly oxidized, and platinum is present in both the reduced and ionic states. The oxidation of



saturated hydrocarbons affords alcs. and ketones. The yield of the positional isomers of the oxygenated products increases in the series primary << secondary < tertiary C-atoms. Benzene and toluene are converted into the corresponding phenols in equal yields. The scheme proposed for oxidation assumes the participation of the active hydroxyl radical.

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 23, 24, 25

IT 1343-93-7 1344-28-1, Alumina, uses 7440-06-4, Platinum, uses

12026-57-2 12207-90-8 12293-15-1

12293-21-9 12293-24-2 12398-73-1

12411-60-8 12786-62-8 104484-97-1

146066-47-9

RL: CAT (Catalyst use); USES (Uses)

(catalytic systems based on platinum and heteropoly compds.

for oxidation of hydrocarbons with a dioxygen-dihydrogen gaseous mixture)

IT 1343-93-7 12026-57-2 12207-90-8

12293-15-1 12293-21-9 12293-24-2

12398-73-1 12411-60-8 12786-62-8

104484-97-1 146066-47-9

RL: CAT (Catalyst use); USES (Uses)

(catalytic systems based on platinum and heteropoly compds.

for oxidation of hydrocarbons with a dioxygen-dihydrogen gaseous mixture)

RN 1343-93-7 HCAPLUS

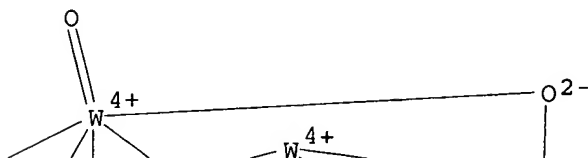
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':.kappa

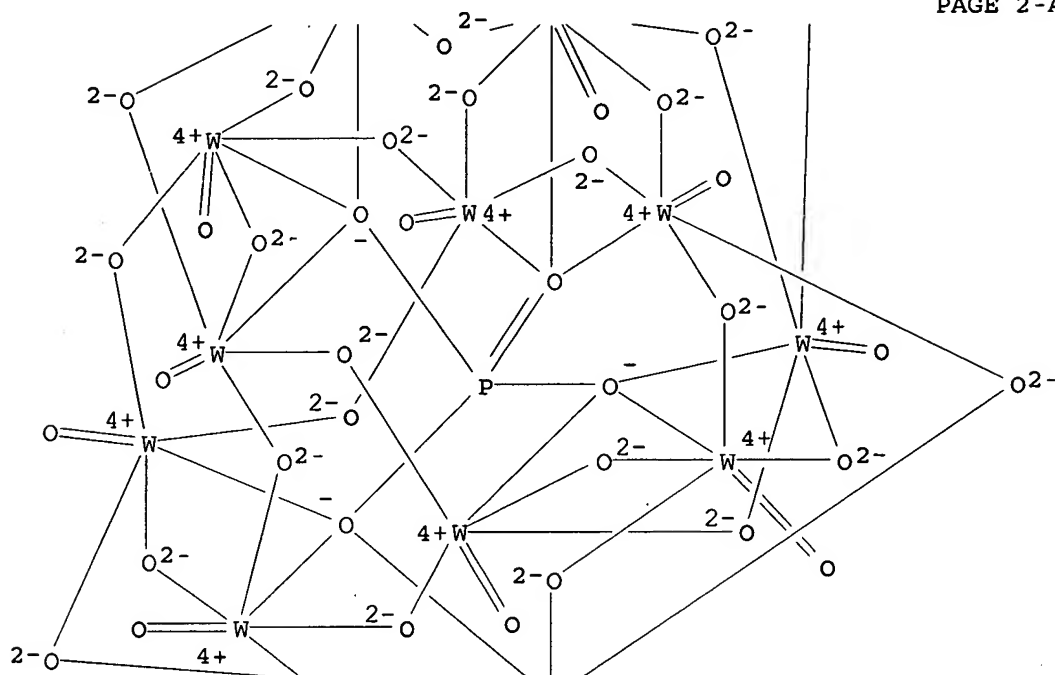
.O'':κO'':κO'':κO'':κO'':κO'']dodeca-, trihydrogen

(9CI) (CA INDEX NAME)

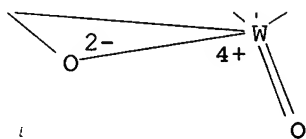
PAGE 1-A



PAGE 2-A

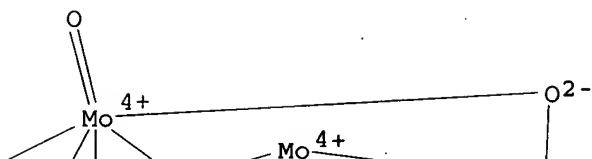


PAGE 3-A

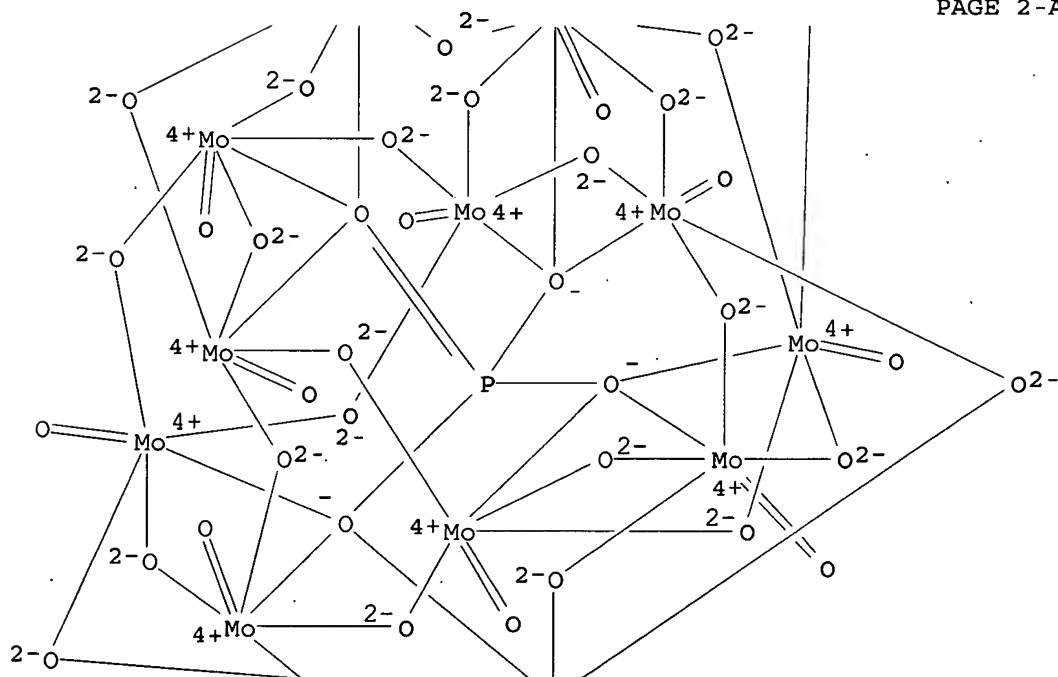
●3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

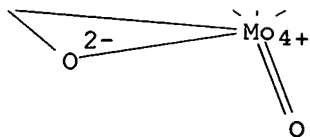
PAGE 1-A



PAGE 2-A



PAGE 3-A

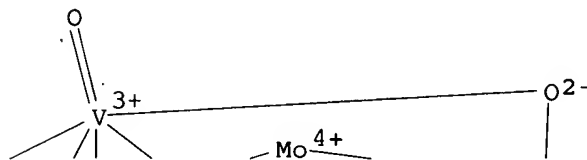
 $\bullet_3 \text{H}^+$ 

RN 12207-90-8 HCAPLUS  
CN Molybdate(6-), hexatriaconta-μ-oxooctadeca-oxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kappa  
a.O'':κO'']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

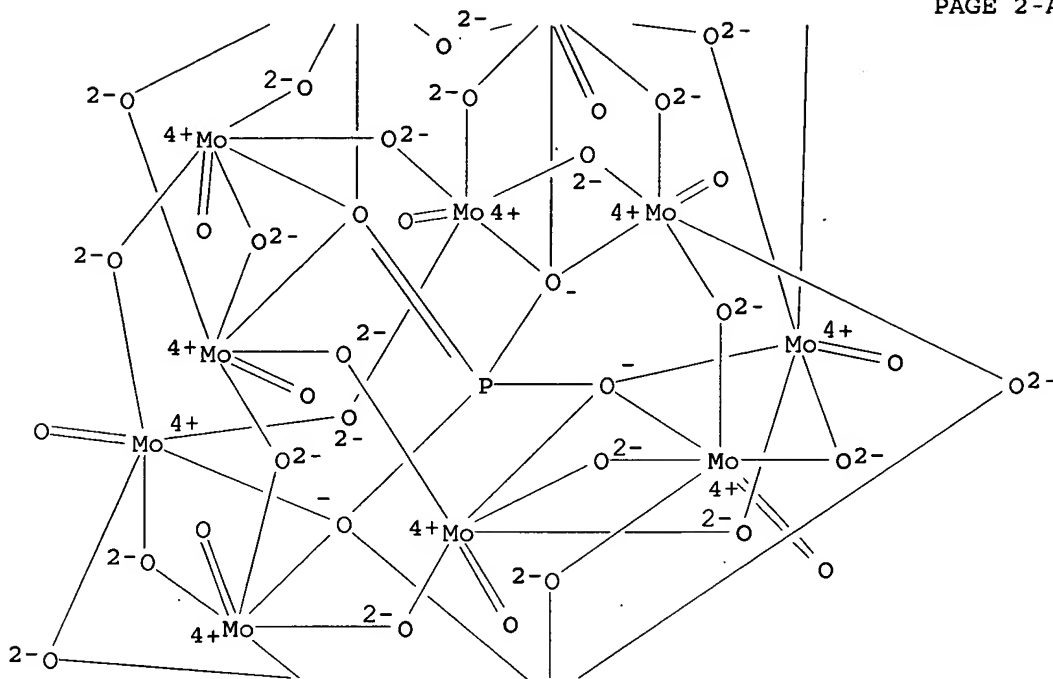
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12293-15-1 HCAPLUS  
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-  
oxoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO  
' :κO':κO'':κO'':κO'':κO'':κO'':κapp  
a.O'']]], tetrahydrogen (9CI) (CA INDEX NAME)

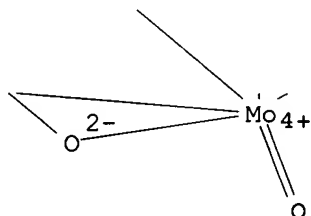
PAGE 1-A



PAGE 2-A

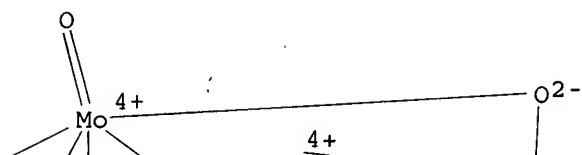


PAGE 3-A

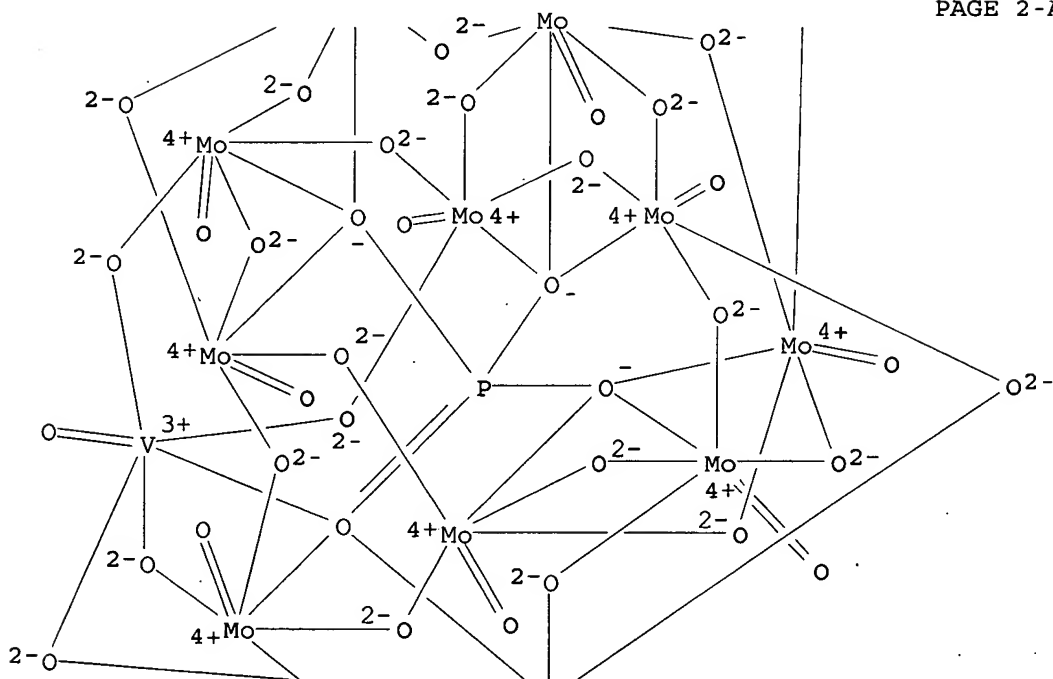
● 4 H<sup>+</sup>

RN 12293-21-9 HCAPLUS  
 CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate) hepta-μ-  
 oxodioxo [μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa  
 .O':κO':κO':κO':κO':κO':κO':.ka  
 ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A

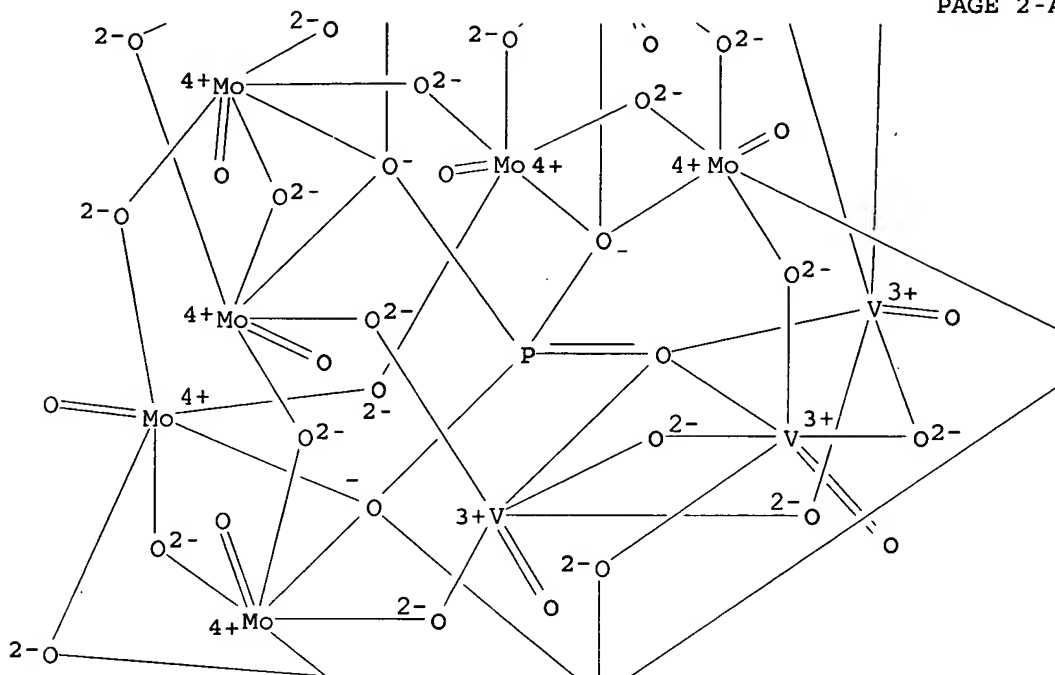


PAGE 2-A





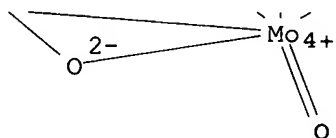
PAGE 2-A



PAGE 2-B



PAGE 3-A

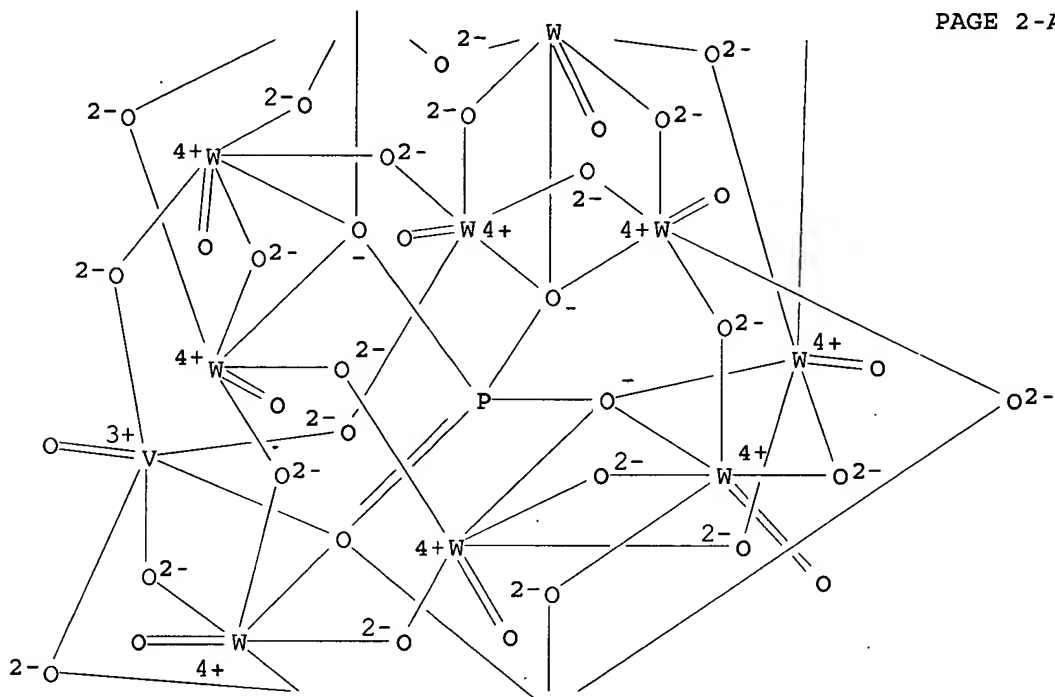


● 6 H<sup>+</sup>

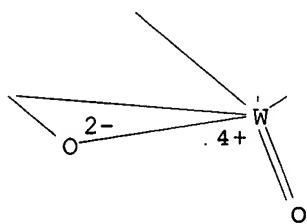


```
RN      12398-73-1    HCAPLUS
CN      Vanadate(4-), (eicosa-μ-oxoundecaοxoundecatingstate)tetra-μ-
        oxooxo[μ12-[phosphato(3-) -κO:κO:κO:κO':κO
        ':κO':κO':κO':κO':κO':κO':κO':κO']·kapp
        a.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT.\*



PAGE 2-A

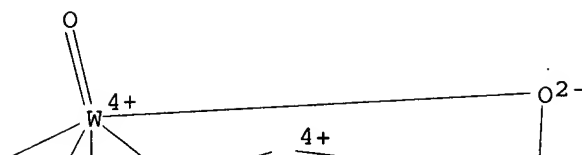


PAGE 3-A

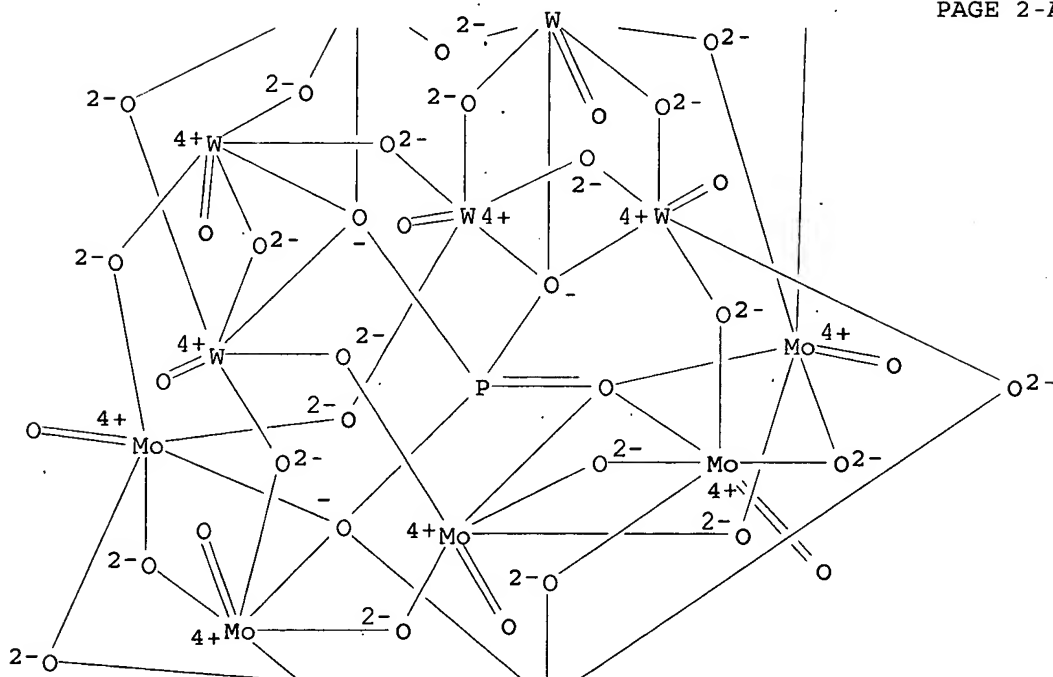
$$\bullet_4 \text{ H}^+$$

```
RN      12411-60-8   HCAPLUS  
CN      Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-  
.        oxoheaxaoxo[μ12-[phosphato(3-) -κO':κO':κO':κO'::kap  
pa.O':κO':κO'':κO'':κO''':κO'''':κO''':κO''']:  
kappa.O''']]hexa-, trihydrogen (9CI)    (CA INDEX NAME)
```

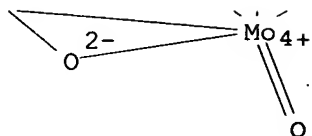
PAGE 1-A



PAGE 2-A



PAGE 3 - A

 $\bullet_3 \text{H}^+$ 

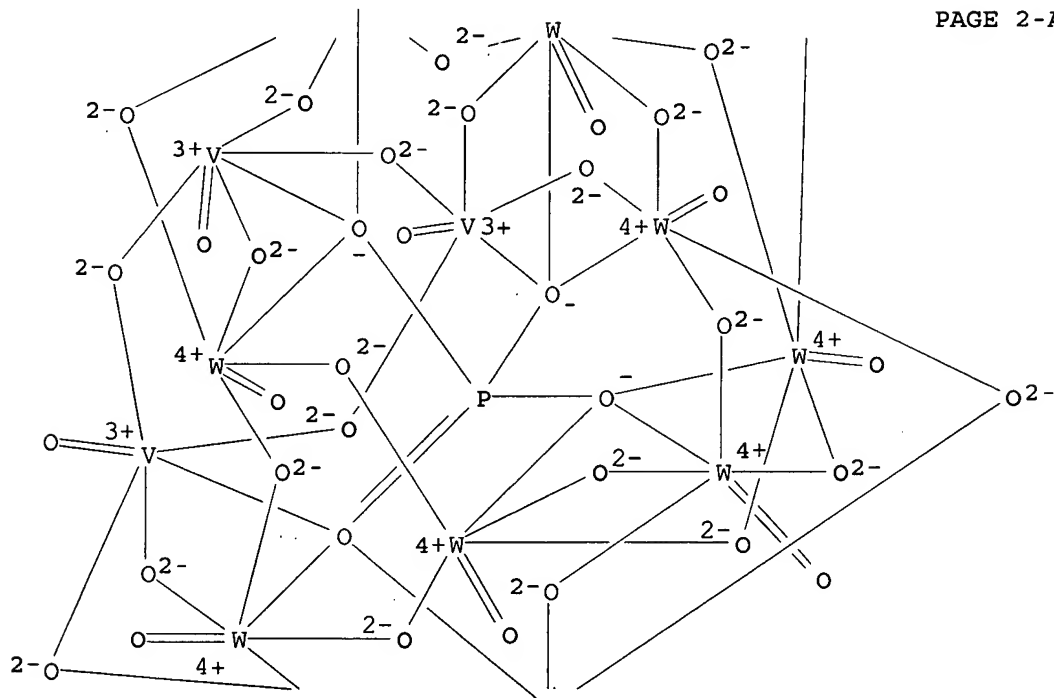
```

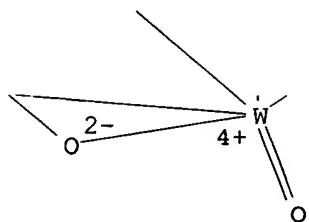
RN      12786-62-8   HCAPLUS
CN      Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-
      oxononaaxononatungstate) [μ12-[phosphato(3-)-
      κO:κO:κO:κO':κO':κO':κO'':.kappa
      .O'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen
      (9CI) (CA INDEX NAME)

```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



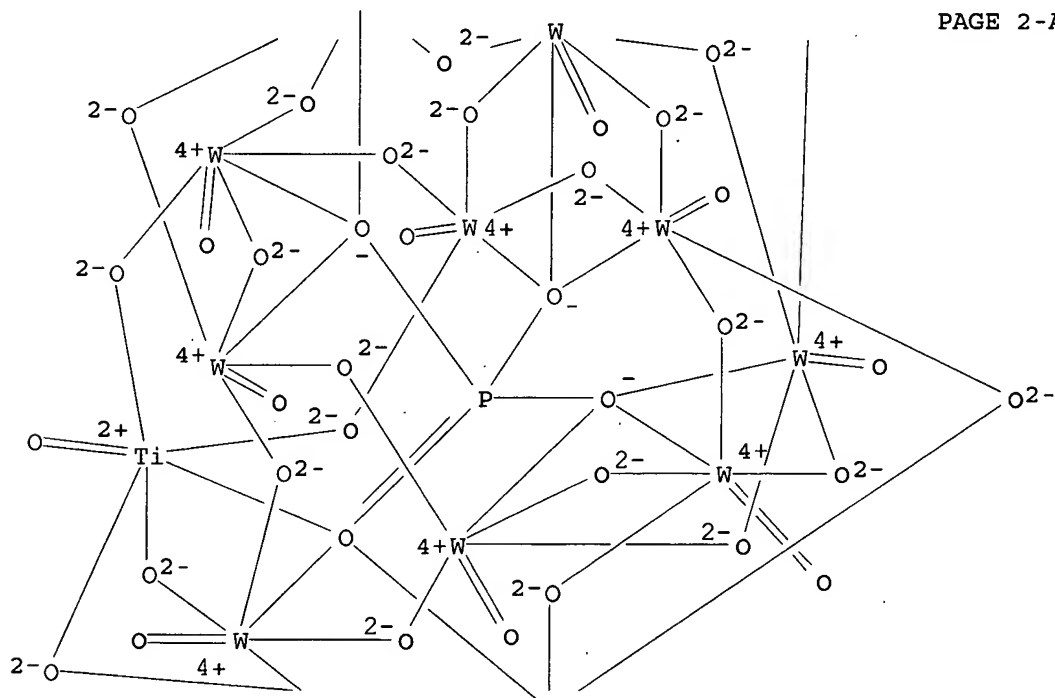


PAGE 3-A

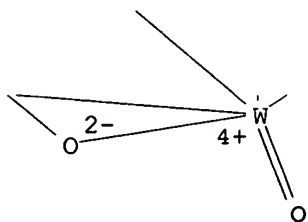
● 6 H<sup>+</sup>

```
RN      104484-97-1   HCAPLUS
CN      Titanate(5-), (eicosa-μ-oxoundecaοxoundecatingstate)tetra-μ-
        oxooxo:[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO'':κO'':κO'':κO'':κO'':κO'':κapp
        a.O''']]-, pentahydrogen (9CI)    (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A

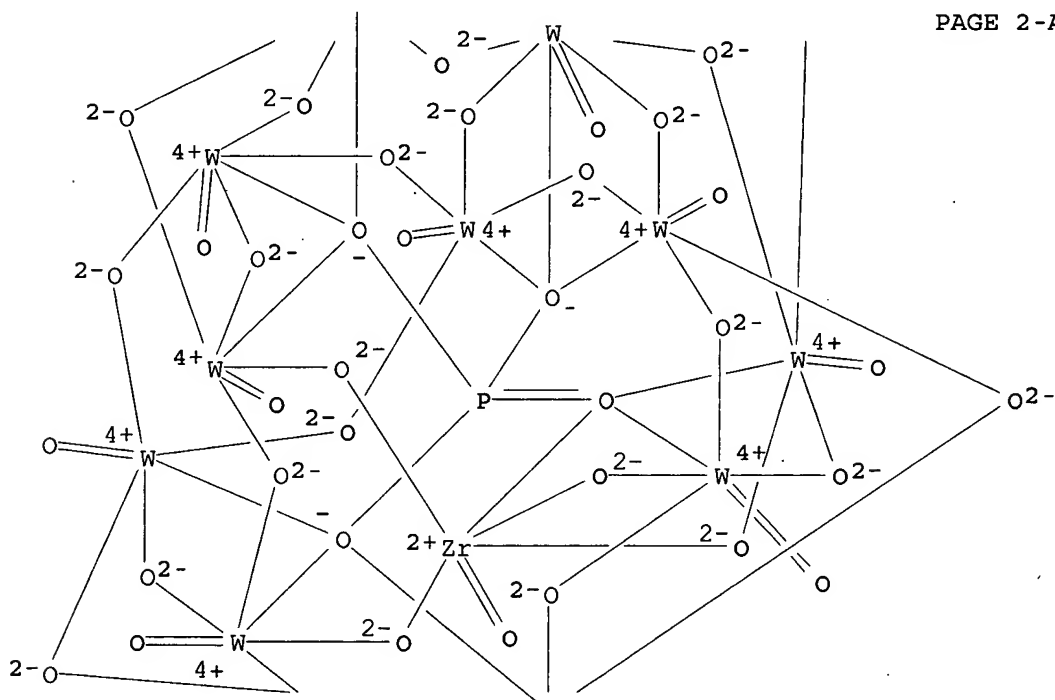


PAGE 3 -A

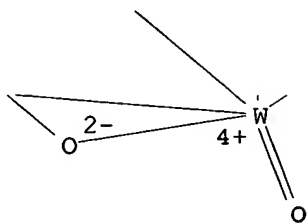
● 5 H<sup>+</sup>

```
RN      146066-47-9   HCAPLUS  
CN      Zirconate(5-), (eicosa-μ-oxoundeca-  
         oxooxo[μ12-[phosphato(3-) -κO : κO : κO : κO' : κO  
         ': κO': κO'' : κO''' : κO''' : κO'''] : .kapp  
         a.O'''])]- , pentahydrogen (9CI)    (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



PAGE 3-A

● 5 H<sup>+</sup>

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 27 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:364007 HCAPLUS

DN 136:369510

TI Method for production of oxygen-containing aromatic compounds using mixed metal heteropoly acid catalysts

IN Sumida, Yasutaka; Wada, Masahiro; Mizuno, Noritaka

PA Nippon Shokubai Co., Ltd., Japan; Nippon Catalytic Chem. Ind.

SO Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1205462	A1	20020515	EP 2001-126376	20011107 <--
	EP 1205462	B1	20040721		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2002205969	A2	20020723	JP 2001-337396	20011102 <--
PRAI	JP 2000-343673	A	20001110	<--	

OS CASREACT 136:369510

AB A method is described for oxidizing aromatic compds. possessing at least one alkyl substituent by using a polyoxometalate catalyst which avoids the presence of corrosive bromine ions, remains stable without decomposition even in an oxidizing atmospheric, and permits reclamation. An aromatic compound possessing at least one alkyl substituent is oxidized by using a polyoxometalate catalyst in which the heteroatom is selected from phosphorus, silicon, and germanium and the primary metal is selected from molybdenum, tungsten, vanadium, and niobium. The Keggin type heteropoly acid possesses two defective structure sites which are occupied by an element of Periods 4-6 of Groups IB, VA, VIIA, and VIII in the Periodic Table of the Elements.

IC ICM C07C045-36

ICS C07C051-265

CC 25-17 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 45, 78

IT 10421-48-4, Ferric nitrate

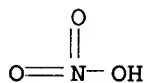
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(cocatalyst with metal deficient tungstosilicate heteropoly acids for oxidation of alkyl aromatic compds.)

IT 64684-57-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

- (Reactant or reagent)  
(preparation and reaction with ferric **nitrate** to give oxidation catalyst for alkyl aromatic compds.)
- IT 7439-98-7DP, Molybdenum, heteropolyoxometalates 7440-03-1DP, Niobium, heteropolyoxometalates 7440-33-7DP, Tungsten, heteropolyoxometalates 7440-62-2DP, Vanadium, heteropolyoxometalates 10141-05-6DP, Cobalt(II) **nitrate**, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 10377-66-9DP, Manganese(II) **nitrate**, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 13138-45-9DP, Nickel(II) **nitrate**, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 13718-26-8DP, Sodium vanadate, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 16903-35-8DP, Chloroauric acid, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 102073-48-3DP, reaction products with transition metal salts and tetrabutylammonium **nitrate** 214201-54-4P 214201-58-8P 219995-42-3P 425375-79-7P, Cobalt potassium tungsten oxide silicate 425429-58-9P
- RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation of oxygen containing aromatic compds. by oxidation of alkyl aromatic compds.  
using mixed metal **heteropoly** acid catalysts)
- IT 1941-27-1, Tetrabutylammonium **nitrate**  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of oxygen containing aromatic compds. by oxidation of alkyl aromatic compds.  
using mixed metal **heteropoly** acid catalysts)
- IT 102073-48-3P 425429-59-0P  
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(preparation, cocatalyst with ferric **nitrate** and reaction with transition metal salts to give oxidation catalysts for alkyl aromatic compds.)
- IT 10421-48-4, Ferric **nitrate**  
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
(cocatalyst with metal deficient tungstosilicate **heteropoly** acids for oxidation of alkyl aromatic compds.)
- RN 10421-48-4 HCAPLUS  
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

- IT 10141-05-6DP, Cobalt(II) **nitrate**, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 13138-45-9DP, Nickel(II) **nitrate**, reaction products with  $\gamma$ -tungstosilicate and tetrabutylammonium **nitrate** 102073-48-3DP, reaction products with transition metal salts and tetrabutylammonium **nitrate** 219995-42-3P

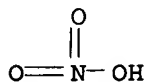
425429-58-9P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)(preparation of oxygen containing aromatic compds. by oxidation of alkyl aromatic  
compds.

using mixed metal heteropoly acid catalysts)

RN 10141-05-6 HCAPLUS

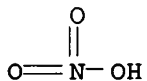
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Co(II)

RN 13138-45-9 HCAPLUS

CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)



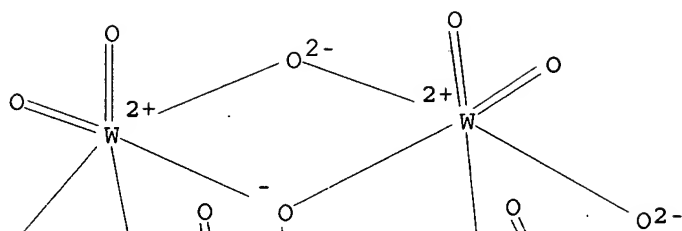
●1/2 Ni(II)

RN 102073-48-3 HCAPLUS

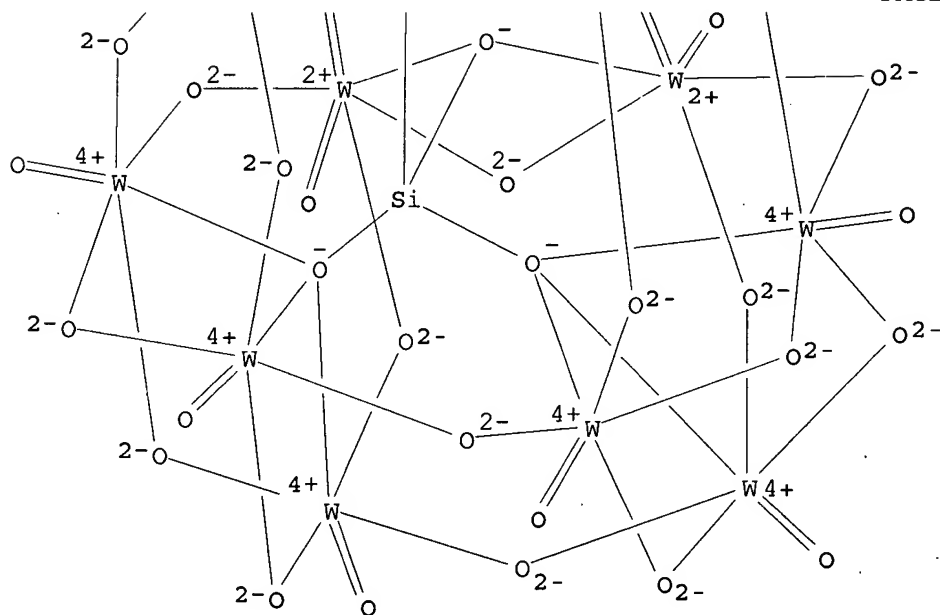
CN Tungstate(8-), [ $\mu$ 10-[orthosilicato(4-)- $\kappa$ O: $\kappa$ O: $\kappa$ O:.kappa.O': $\kappa$ O': $\kappa$ O': $\kappa$ O': $\kappa$ O': $\kappa$ O': $\kappa$ O']octadeca- $\mu$ -oxotetradeca-oxodeca-, octapotassium (9CI) (CA INDEX NAME)



PAGE 1-A



PAGE 2-A



PAGE 3-A

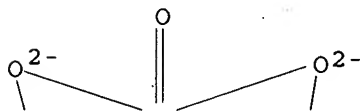
● 8 K<sup>+</sup>

RN 219995-42-3 HCAPLUS  
CN 1-Butanaminium, N,N,N-tributyl-, (diaquadi-μ-oxodiferrate) [μ12-  
[orthosilicato(4-)-κO:κO:κO:κO':κO':κO  
'':κO''':κO''':κO''':κO''':κO''':κO''']do  
cosa-μ-oxodecaoxodecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

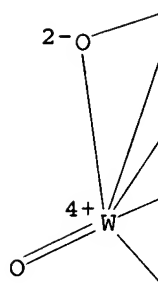
CM 1

CRN 219995-41-2  
CMF Fe2 H4 O40 Si W10  
CCI CCS

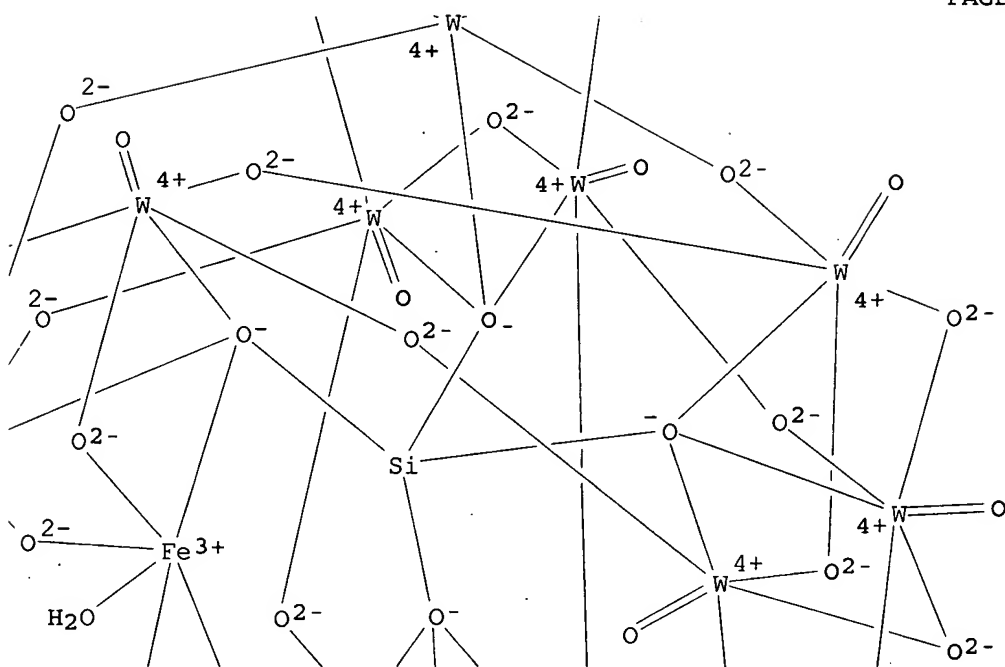
PAGE 1-B



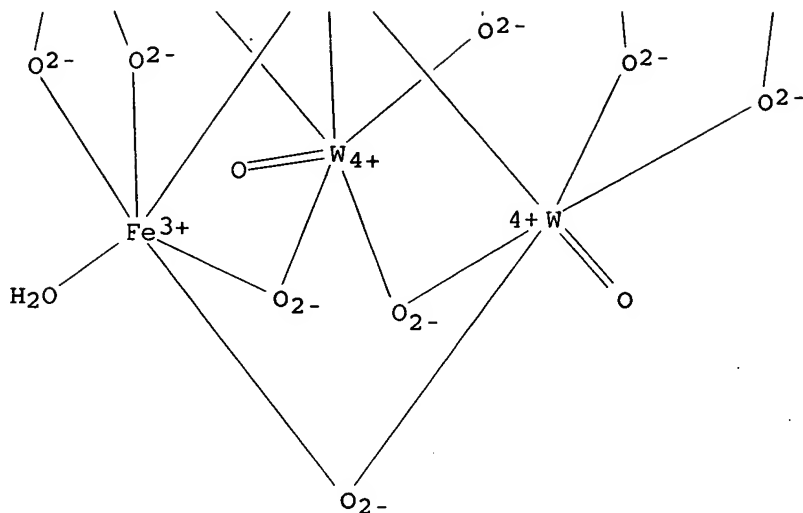
PAGE 2-A



PAGE 2-B



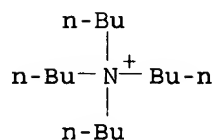
PAGE 3-B



CM 2

CRN 10549-76-5

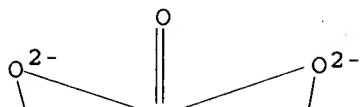
CMF C16 H36 N



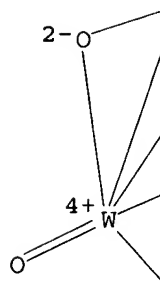
RN 425429-58-9 HCAPLUS

CN Tungstate(6-), (diaguardi-μ-oxodimanganate) [μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O':κO':κO'':κO'':κO'']]docosa-μ-oxodecaoxodeca-, hexapotassium (9CI) (CA INDEX NAME)

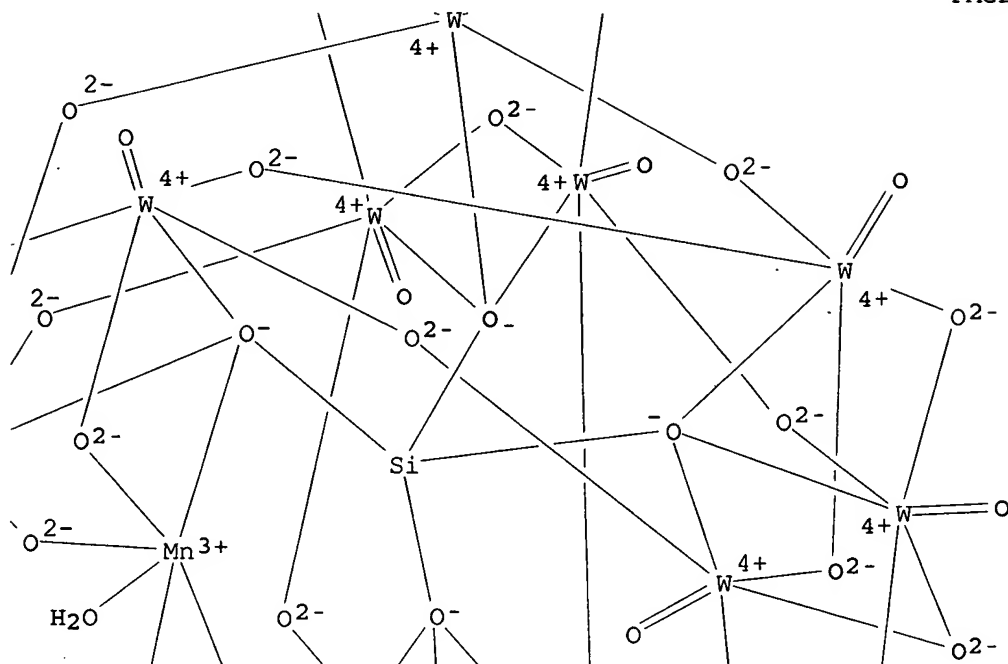
PAGE 1-B



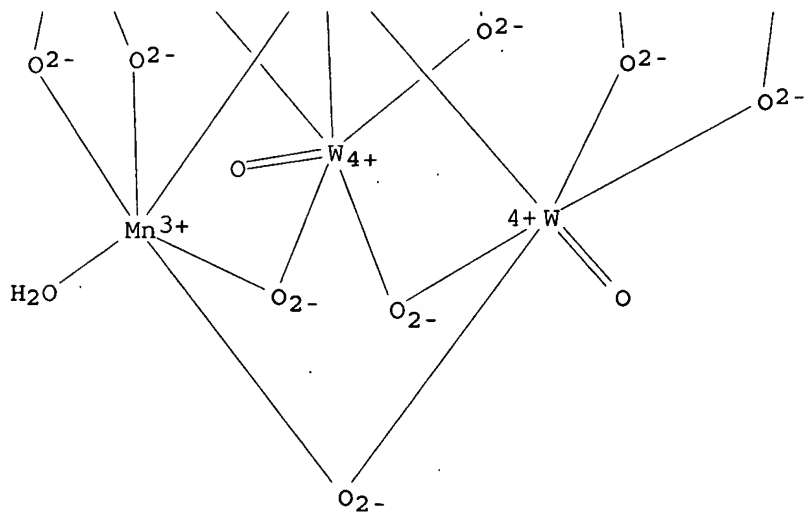
PAGE 2-A



PAGE 2-B



PAGE 3-B



PAGE 4-A

● 6 K<sup>+</sup>

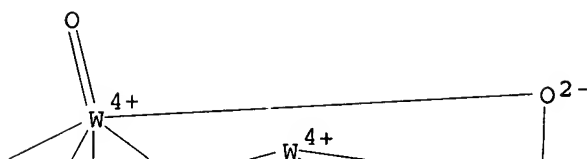
RE.CNT 4

THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

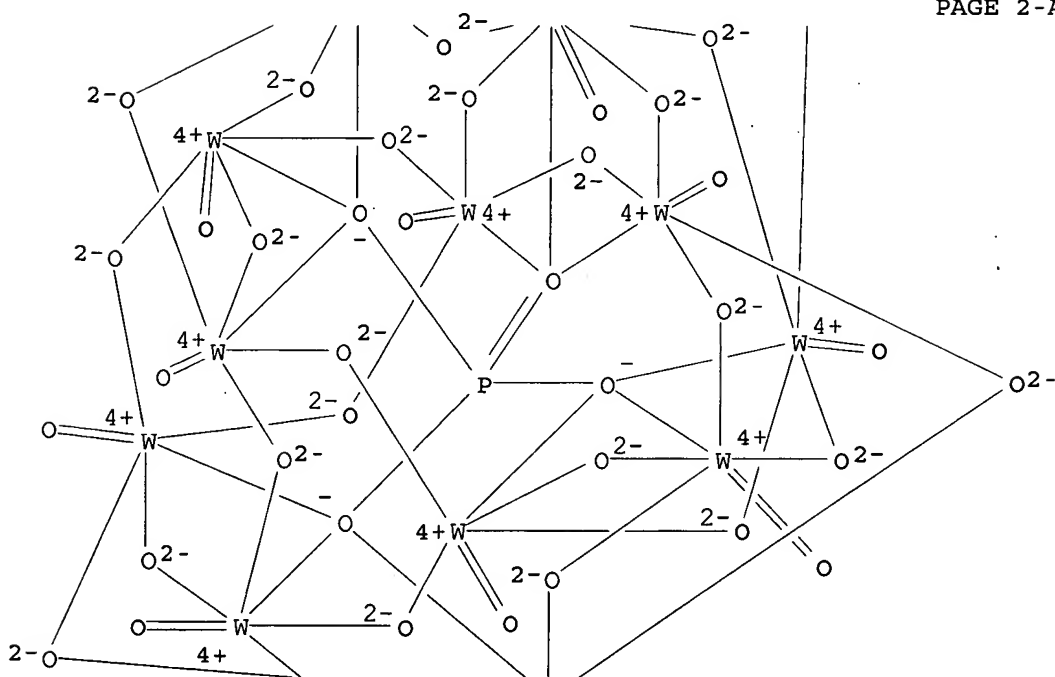
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

L32 ANSWER 28 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2002:245400 HCAPLUS  
DN 137:201115  
TI Hydroxylation of phenol catalyzed by copper Keggin-type heteropoly  
compounds with hydrogen peroxide  
AU Zhang, Hanpeng; Zhang, Xiaoming; Ding, Yong; Yan, Liang; Ren, Tong; Suo,  
Jishuan  
CS State Key Laboratory for Oxo Synthesis and Selective Oxidation, Lanzhou  
Institute of Chemical Physics, The Chinese Academy of Sciences, Lanzhou,  
730000, Peop. Rep. China  
SO New Journal of Chemistry (2002), 26(4), 376-377  
CODEN: NJCHE5; ISSN: 1144-0546  
PB Royal Society of Chemistry  
DT Journal  
LA English  
OS CASREACT 137:201115  
AB A novel catalytic process for the oxidation of phenol to dihydroxybenzene  
with hydrogen peroxide was developed in which copper-12-silicotungstic  
acid was used as catalyst in aqueous solution. The maximal conversion of phenol  
is ca. 39%, which is much higher than the results in acetonitrile reported  
previously.  
CC 25-10 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
IT 142-71-2, Cupric acetate 1343-93-7, 12-Tungstophosphoric acid  
3251-23-8, Cupric nitrate 7447-39-4, Cupric chloride,  
uses 7758-89-6, Cuprous chloride 7758-98-7, Copper sulfate, uses  
12026-57-2, 12-Molybdophosphoric acid 12027-12-2,  
12-Molybdosilicic acid 12027-38-2 114027-27-9 454472-59-4  
RL: CAT (Catalyst use); USES (Uses)  
(hydroxylation of phenol catalyzed by copper Keggin-type  
heteropoly compds. with hydrogen peroxide)  
IT 1343-93-7, 12-Tungstophosphoric acid 3251-23-8, Cupric  
nitrate 12026-57-2, 12-Molybdophosphoric acid  
12027-12-2, 12-Molybdosilicic acid 12027-38-2  
RL: CAT (Catalyst use); USES (Uses)  
(hydroxylation of phenol catalyzed by copper Keggin-type  
heteropoly compds. with hydrogen peroxide)  
RN 1343-93-7 HCAPLUS  
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':κappa  
.O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

PAGE 1-A

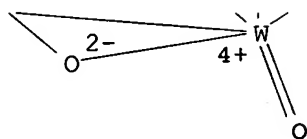


PAGE 2-A



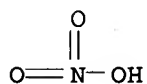


PAGE 3-A

●3 H<sup>+</sup>

RN 3251-23-8 HCAPLUS

CN Nitric acid, copper(2+) salt (8CI, 9CI) (CA INDEX NAME)

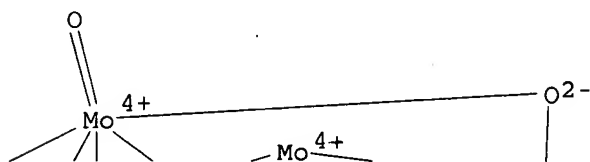


●1/2 Cu(II)

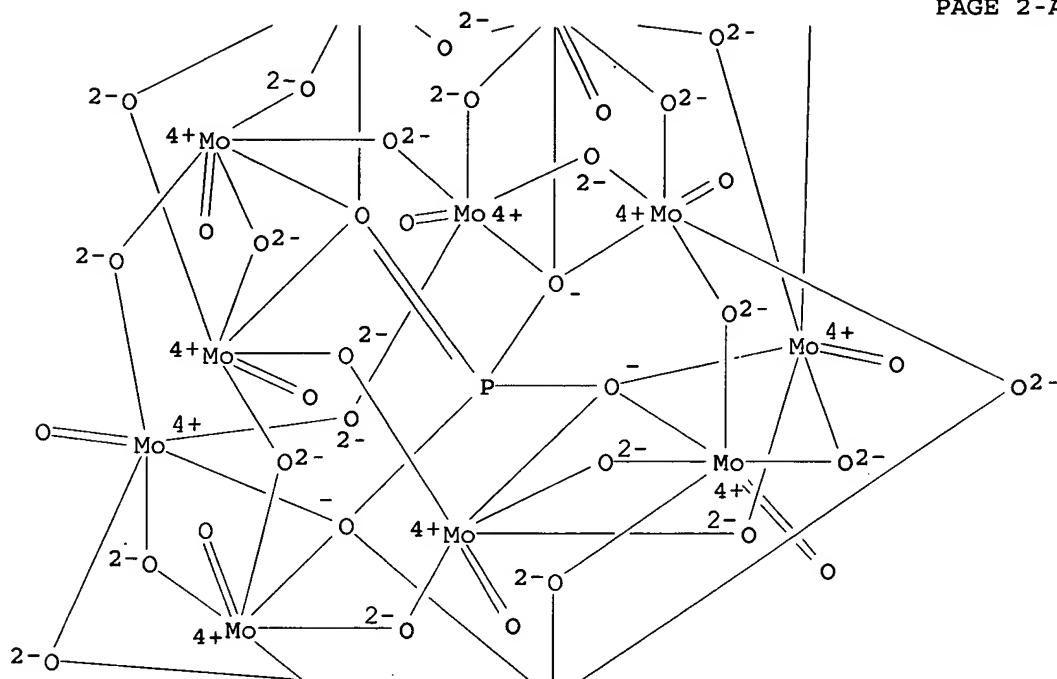
RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

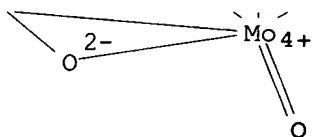
PAGE 1-A



PAGE 2-A



PAGE 3-A



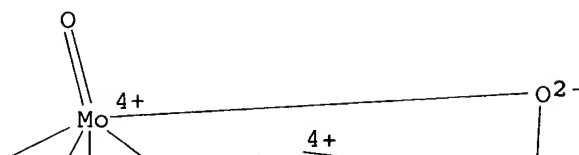
● 3 H<sup>+</sup>

```

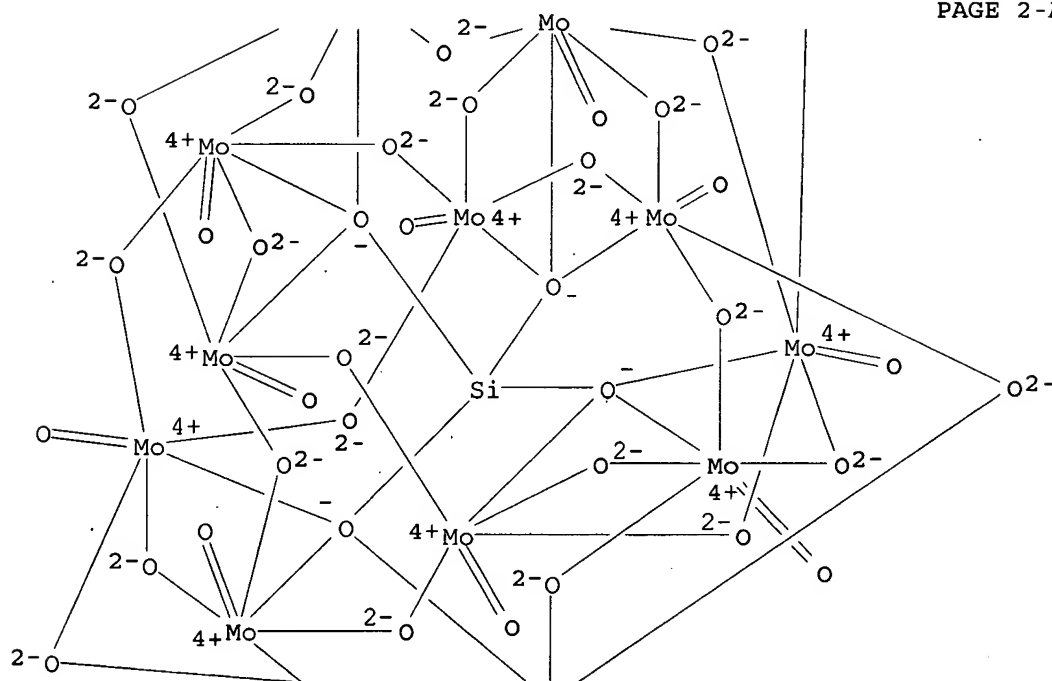
RN      12027-12-2   HCAPLUS
CN      Molybdate(4-), [mu12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosα-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

```

PAGE 1-A

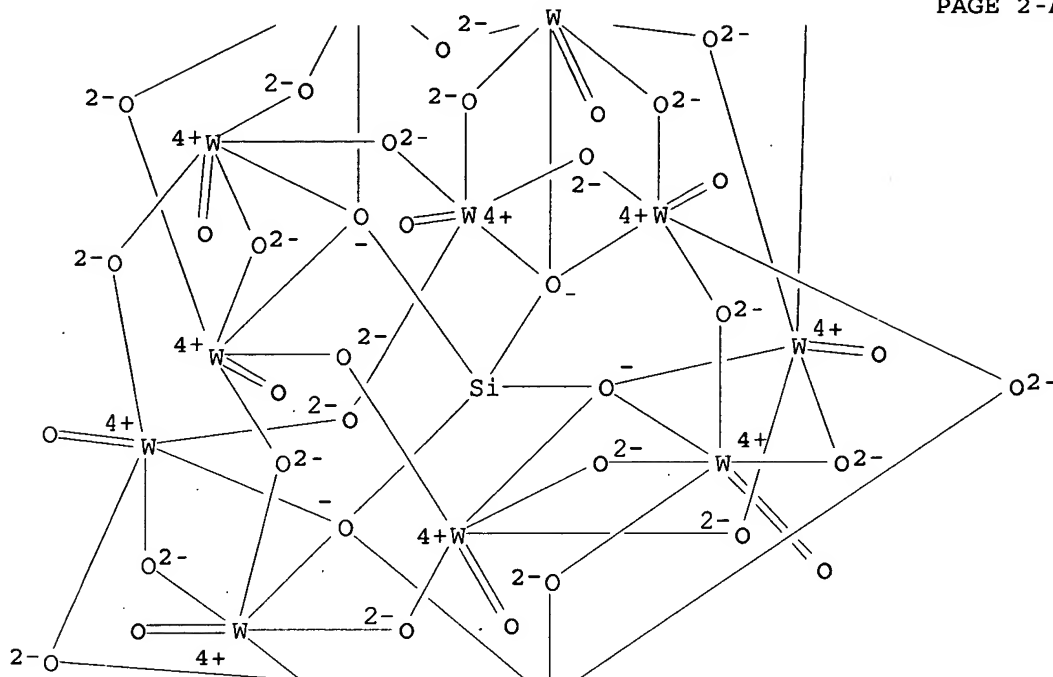


PAGE 2-A

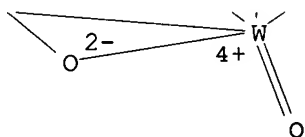




PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

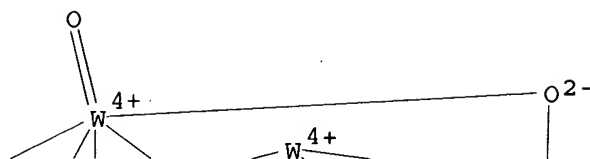
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 29 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2002:168805 HCAPLUS  
DN 137:95992  
TI Isomerization of n-Hexane over Silica-Supported Heteropoly Acids Promoted  
by the Reduced Ce-Ni Oxides  
AU Kuang, Wenxing; Rives, Alain; Ben Tayeb, Bouchta Ouled; Fournier, Michel;  
Hubaut, Robert  
CS Laboratoire de Catalyse Heterogene et Homogene, UPRESA 8010, Universite  
des Sciences et Technologies de Lille, Villeneuve d'Ascq, 59655, Fr.  
SO Journal of Colloid and Interface Science (2002), 248(1), 123-129  
CODEN: JCISA5; ISSN: 0021-9797  
PB Academic Press  
DT Journal  
LA English

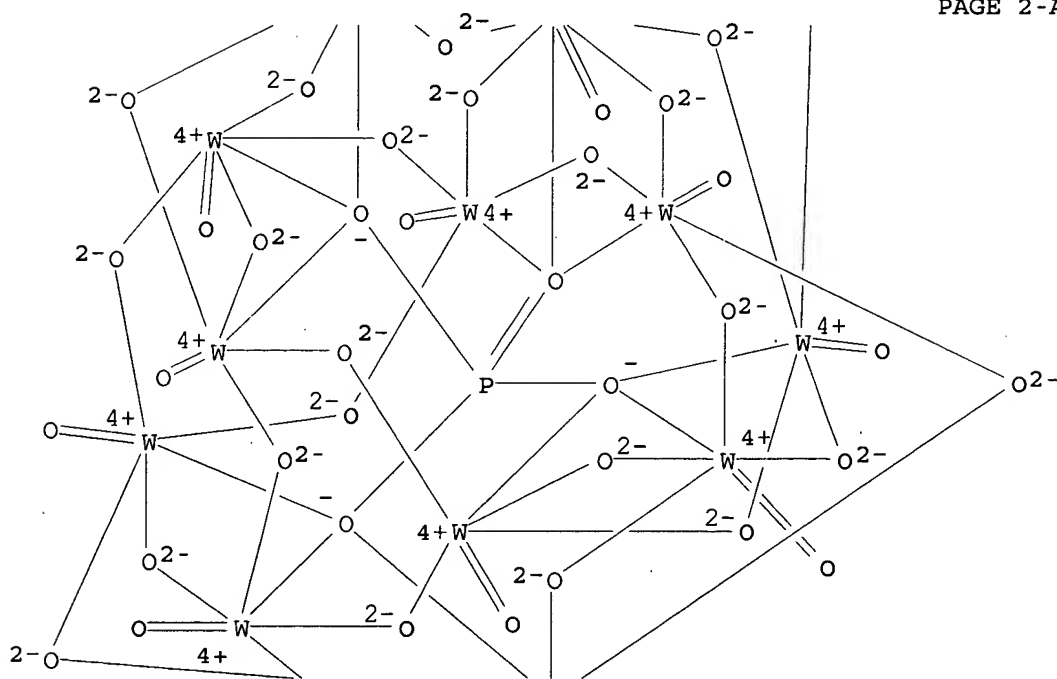
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

- AB The structure and catalytic properties of silica-supported heteropoly acids promoted by the reduced Ce-Ni oxides are 1st studied by using chemical anal. XRD, FT-Raman, XPS, EPR, TG, surface area measurements, and microreactor test. Silica-supported heteropoly acids have isomerization activity, but are very easy to deactivate by coke deposition. With the promotion of the reduced Ce-Ni oxides, however, the better activity and the higher selectivity to isomers could be obtained, suggesting that the reduced Ce-Ni oxides really have hydrogenating/dehydrogenating functions. Also, the presence of the reduced Ce-Ni oxides is not only beneficial for eliminating the coke deposition, but also effective for maintaining the structure of silica-supported heteropoly acids during reaction. The effect of the **composition** of the mech. mixts. of silica-supported heteropoly acids and the Ce-Ni oxides on the catalytic properties was explored. (c) 2002 Academic Press.
- CC 51-6 (Fossil Fuels, Derivatives, and Related Products)  
Section cross-reference(s): 45, 66
- IT 1343-93-7, 12-Phosphotungstic acid 12027-38-2,  
12-Tungstosilicic acid 12297-12-0, 12-Tungstoboric acid  
134883-91-3, Cerium nickel oxide  
RL: CAT (Catalyst use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(isomerization of n-hexane over silica-supported heteropoly acids promoted by reduced Ce-Ni oxides)
- IT 1343-93-7, 12-Phosphotungstic acid 12027-38-2,  
12-Tungstosilicic acid 12297-12-0, 12-Tungstoboric acid  
RL: CAT (Catalyst use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(isomerization of n-hexane over silica-supported heteropoly acids promoted by reduced Ce-Ni oxides)
- RN 1343-93-7 HCAPLUS
- CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

PAGE 1-A



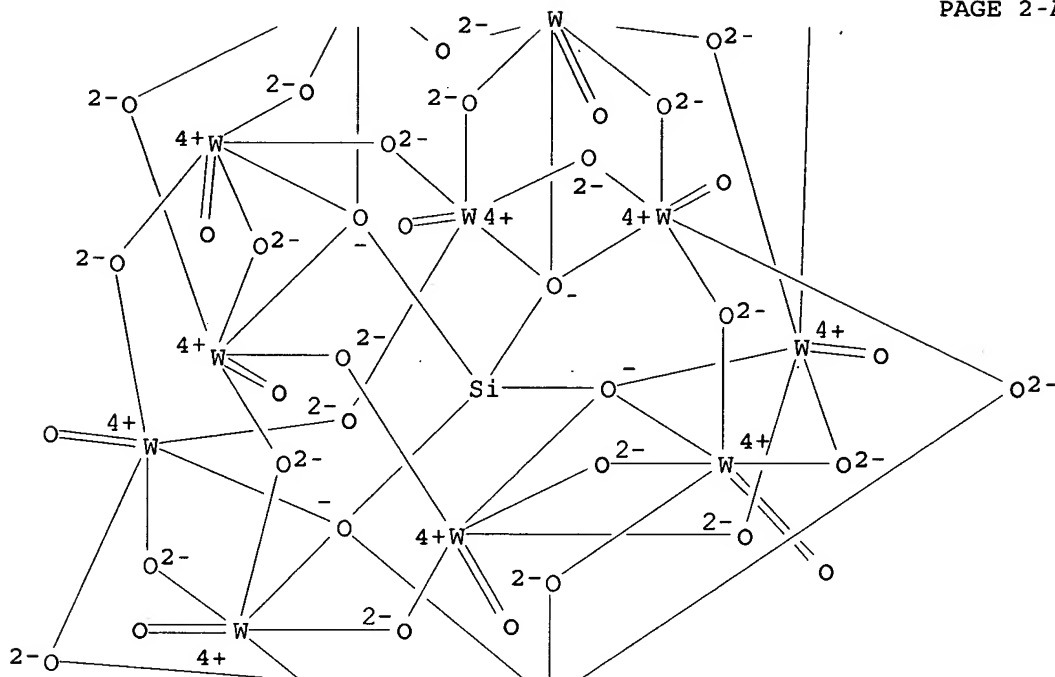
PAGE 2-A



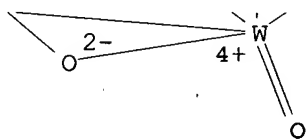




PAGE 2-A

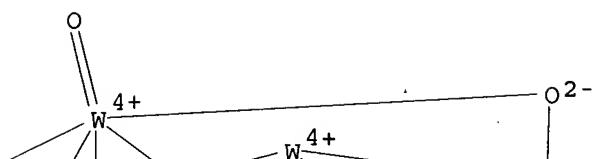


PAGE 3-A

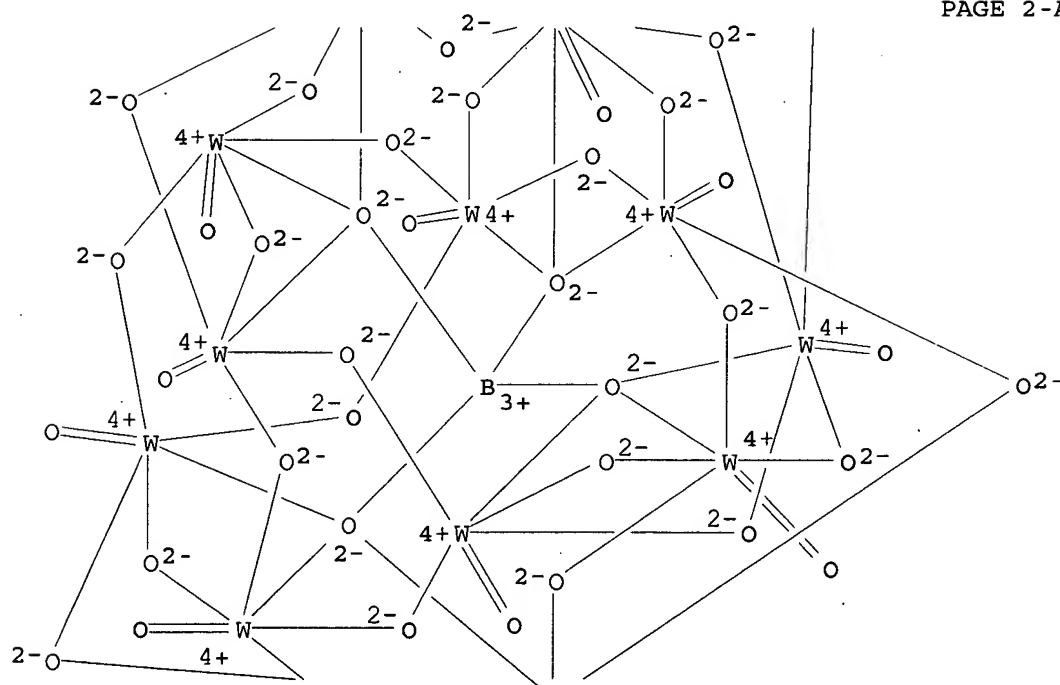
● 4 H<sup>+</sup>

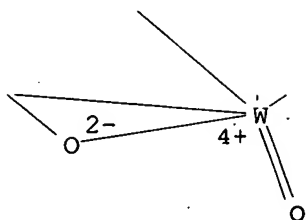
RN 12297-12-0 HCAPLUS  
 CN Tungstate(5-), tetracosam-oxododecaoxo[μ12-[tetrahydroxyborato(5-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-,  
 pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A





PAGE 3-A

●5 H<sup>+</sup>

RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 30 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:148605 HCAPLUS

DN 136:184277

TI Epoxidation catalyst compositions and production methods for epoxy compounds

IN Sakamoto, Takaki; Park, Jong Jin

PA Kawamura Institute of Chemical Research, Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002059007	A2	20020226	JP 2000-250965	20000822 <--
PRAI	JP 2000-250965		20000822 <--		

AB Olefins are epoxidized with H<sub>2</sub>O<sub>2</sub> using catalysts containing W heteropolyacids and Mg(OH)<sub>2</sub>. Thus, 29 mg H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>, 25 mg Mg(OH)<sub>2</sub>, 0.411 g cyclohexene, 1.13 g 30% H<sub>2</sub>O<sub>2</sub>, and 2 mL MeOH were stirred 7 h at 70° under N to prepare cyclohexene oxide at selectivity >99%.

IC ICM B01J027-188

ICS C07D301-12; C07D303-04; C07D303-06; C07B061-00

CC 35-2 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 27

IT 1309-42-8, Magnesium hydroxide 1343-93-7

RL: CAT (Catalyst use); USES (Uses)

(epoxidn. catalysts containing tungsten heteropolyacids and magnesium hydroxide for olefins with hydrogen peroxide)

IT 1343-93-7

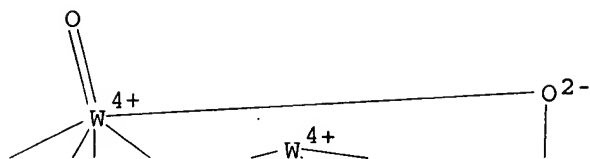
RL: CAT (Catalyst use); USES (Uses)

(epoxidn. catalysts containing tungsten heteropolyacids and magnesium hydroxide for olefins with hydrogen peroxide)

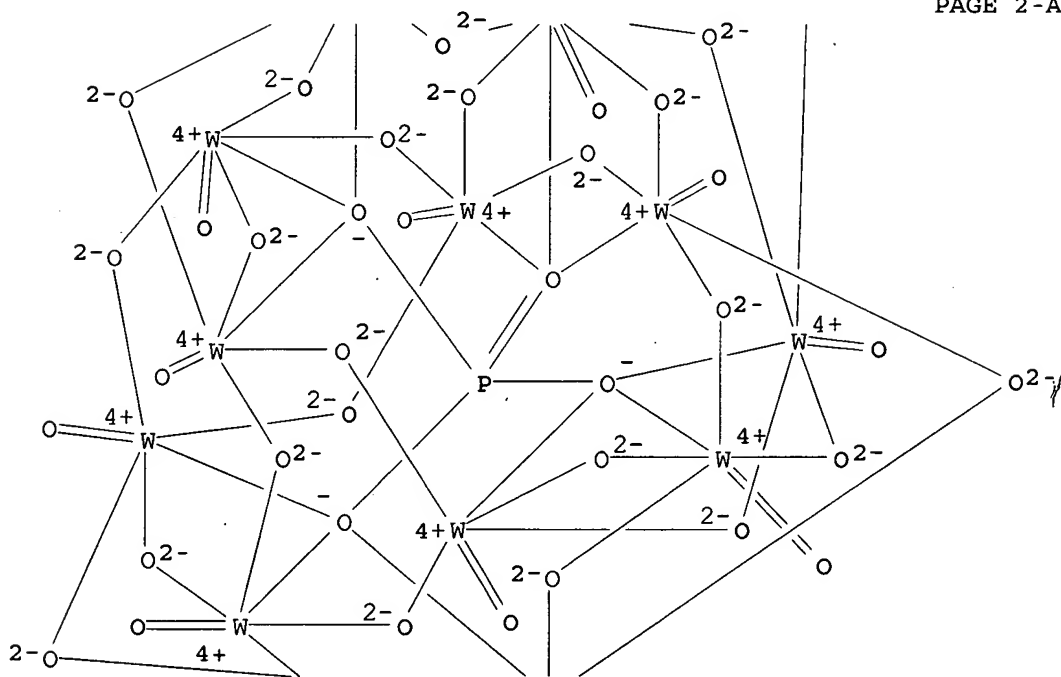
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

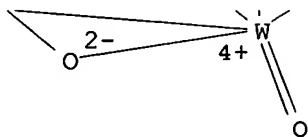
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

- L32 ANSWER 31 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2002:30744 HCAPLUS  
 DN 136:340390  
 TI Esterification of n-butanol with acetic acid in the presence of heteropoly acids with different structures and **compositions**  
 AU Timofeeva, M. N.; Matrosova, M. M.; Maksimov, G. M.; Likholobov, V. A.; Golovin, A. V.; Maksimovskaya, R. I.; Paukshtis, E. A.  
 CS Boreskov Institute of Catalysis, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630090, Russia  
 SO Kinetics and Catalysis (Translation of Kinetika i Kataliz) (2001), 42(6), 791-795  
 CODEN: KICAA8; ISSN: 0023-1584  
 PB MAIK Nauka/Interperiodica Publishing  
 DT Journal  
 LA English  
 OS CASREACT 136:340390  
 AB The esterification reaction of 1-butanol with acetic acid ([BuOH]: [HOAc] = 1:15 mol/mol; 55°, 5% H<sub>2</sub>O) was studied in the presence of tungsten heteropoly acids of the Keggin (H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>, H<sub>4</sub>SiW<sub>12</sub>O<sub>40</sub>, H<sub>5</sub>PW<sub>11</sub>TiO<sub>40</sub>, H<sub>5</sub>PW<sub>11</sub>ZrO<sub>40</sub>, and H<sub>3</sub>PW<sub>11</sub>ThO<sub>39</sub>) and Dawson structure (α-H<sub>6</sub>P<sub>2</sub>W<sub>18</sub>O<sub>62</sub>, H<sub>6</sub>P<sub>2</sub>W<sub>21</sub>O<sub>71</sub>(H<sub>2</sub>O)<sub>3</sub>, H<sub>6</sub>As<sub>2</sub>W<sub>21</sub>O<sub>69</sub>(H<sub>2</sub>O), and H<sub>2</sub>1B<sub>3</sub>W<sub>39</sub>O<sub>132</sub>). The reaction orders with respect to H<sub>6</sub>P<sub>2</sub>W<sub>21</sub>O<sub>71</sub>(H<sub>2</sub>O)<sub>3</sub>, H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>, and H<sub>6</sub>P<sub>2</sub>W<sub>18</sub>O<sub>69</sub> are equal to 0.78, 1.00, and 0.97, resp. It was found that the reaction rate depends on the acidity, as well as on the structure and **composition** of heteropoly acids. The H<sub>2</sub>1B<sub>3</sub>W<sub>39</sub>O<sub>132</sub> heteropoly acid is most active, whereas the Keggin-structure heteropoly acids exhibit the lowest activities. Of the Keggin structure heteropoly acids, H<sub>5</sub>PW<sub>11</sub>ZrO<sub>40</sub> exhibits the highest activity because of the presence of a Lewis acid site in its structure.
- CC 23-17 (Aliphatic Compounds)  
 IT 12411-74-4, Tungstophosphoric acid (α-H<sub>6</sub>P<sub>2</sub>W<sub>18</sub>O<sub>62</sub>)  
 154766-55-9, Tungstophosphoric acid trihydrate [H<sub>6</sub>P<sub>2</sub>W<sub>21</sub>O<sub>71</sub>(H<sub>2</sub>O)<sub>3</sub>]  
 RL: CAT (Catalyst use); USES (Uses)  
 (Dawson-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly acids**)
- IT 1343-93-7, Tungstophosphoric acid (H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>) 12027-38-2  
 , Tungstosilicic acid (H<sub>4</sub>SiW<sub>12</sub>O<sub>40</sub>) 104484-97-1,  
 Tungstotitanophosphoric acid (H<sub>5</sub>PW<sub>11</sub>TiO<sub>40</sub>) 146066-47-9,  
 Tungstozirconophosphoric acid (H<sub>5</sub>PW<sub>11</sub>ZrO<sub>40</sub>) 406939-02-4,  
 Thorotungstophosphoric acid (H<sub>3</sub>PW<sub>11</sub>ThO<sub>39</sub>)  
 RL: CAT (Catalyst use); USES (Uses)  
 (Keggin-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly acids**)
- IT 12411-74-4, Tungstophosphoric acid (α-H<sub>6</sub>P<sub>2</sub>W<sub>18</sub>O<sub>62</sub>)  
 154766-55-9, Tungstophosphoric acid trihydrate [H<sub>6</sub>P<sub>2</sub>W<sub>21</sub>O<sub>71</sub>(H<sub>2</sub>O)<sub>3</sub>]  
 RL: CAT (Catalyst use); USES (Uses)

RN 12411-74-4 HCAPLUS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 154766-55-9 HCAPLUS

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 1343-93-7, Tungstophosphoric acid (H3PW12O40) 12027-38-2

, Tungstosilicic acid (H4SiW12O40) 104484-97-1,  
Tungstotitanophosphoric acid (H5PW11TiO40) 146066-47-9,  
Tungstozirconophosphoric acid (H5PW11ZrO40) 406939-02-4,  
Thorotungstophosphoric acid (H3PW11ThO39)

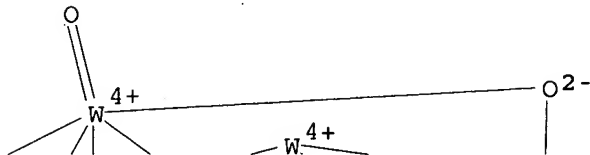
RL: CAT (Catalyst use); USES (Uses)

(Keggin-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly acids**)

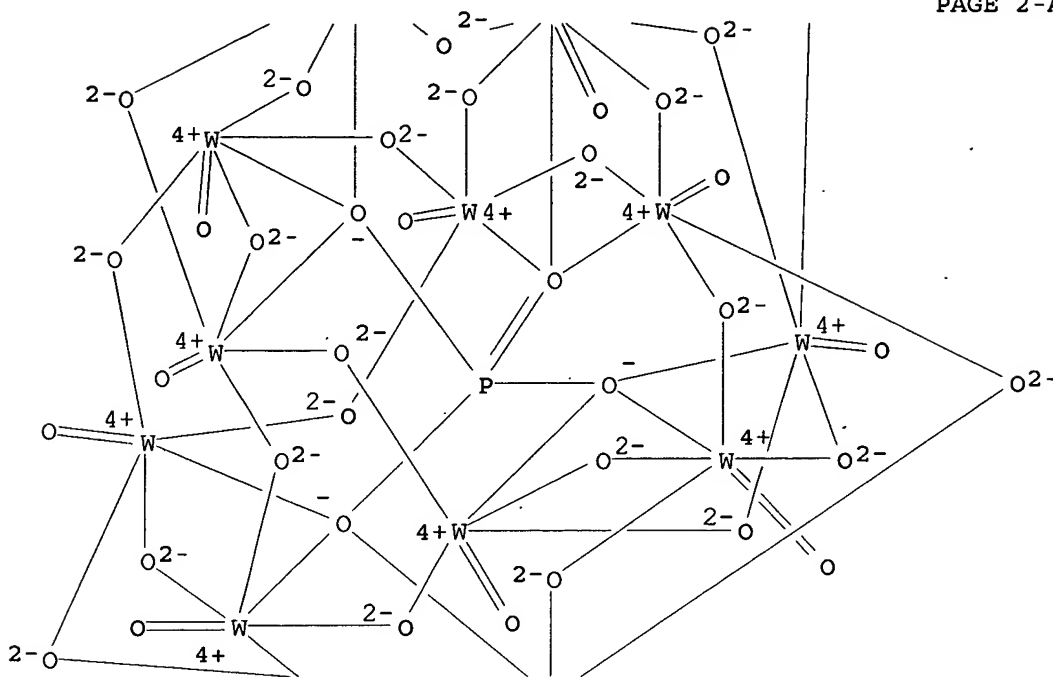
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

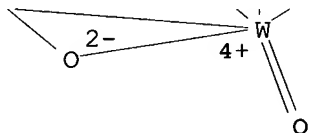
PAGE 1-A



PAGE 2-A



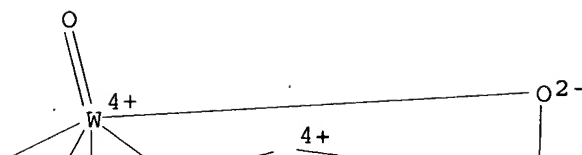
PAGE 3-A



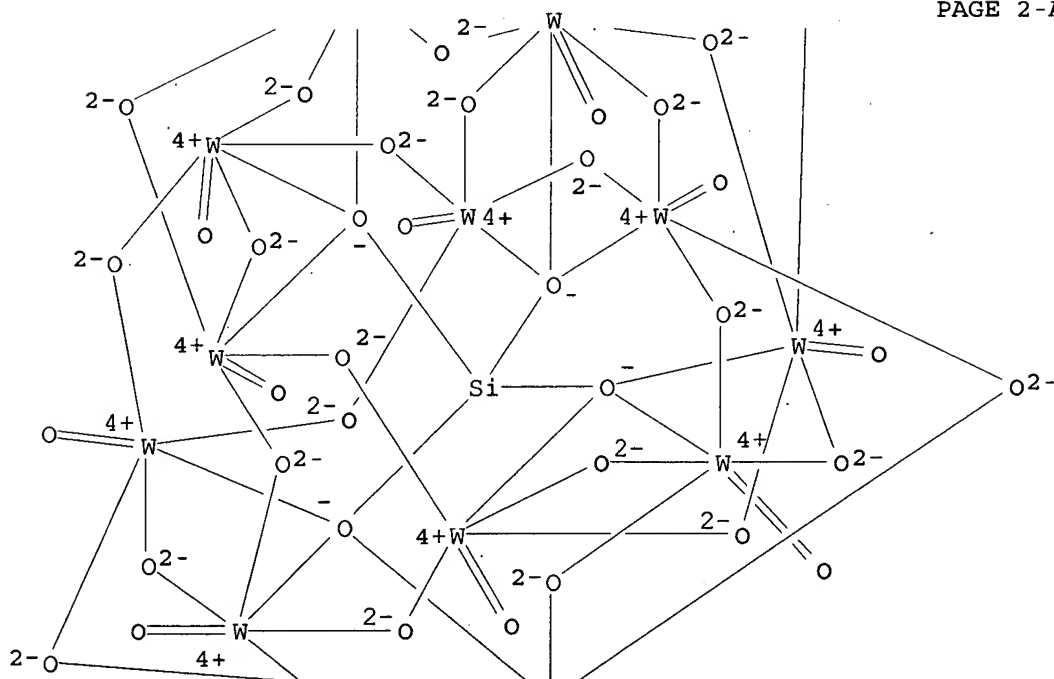
● 3 H<sup>+</sup>

```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)    (CA INDEX NAME)
```

PAGE 1-A

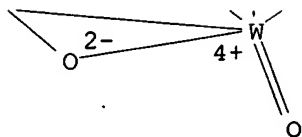


PAGE 2-A





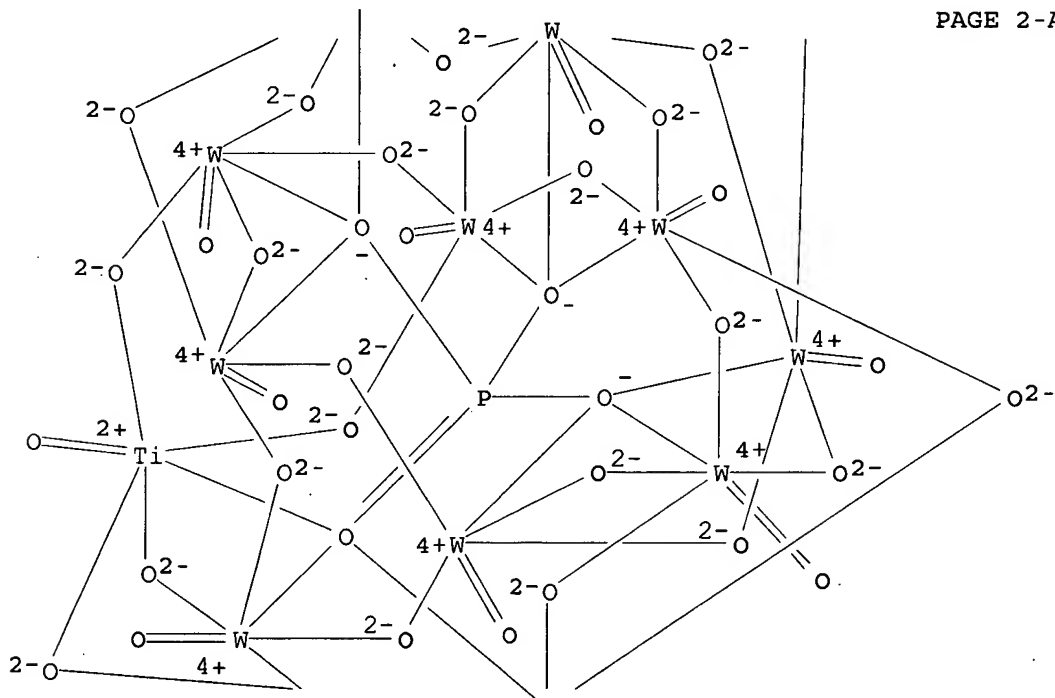
PAGE 3-A

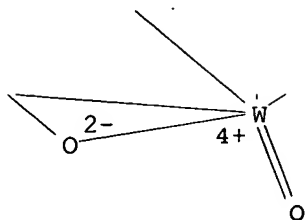
 $\bullet_4 \text{H}^+$ 

```
RN      104484-97-1    HCAPLUS  
CN      Titanate(5-), (eicosa-μ-oxoundecaοxoundecatungstate) tetra-μ-  
          οxoοxo[μ12-[phosphato(3-) -κO : κO : κO : κO' : κO  
          ': κO': κO'' : κO''' : κO''': κO''': .kapp  
          a.O''' ]]-, pentahydrogen (9CI) (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



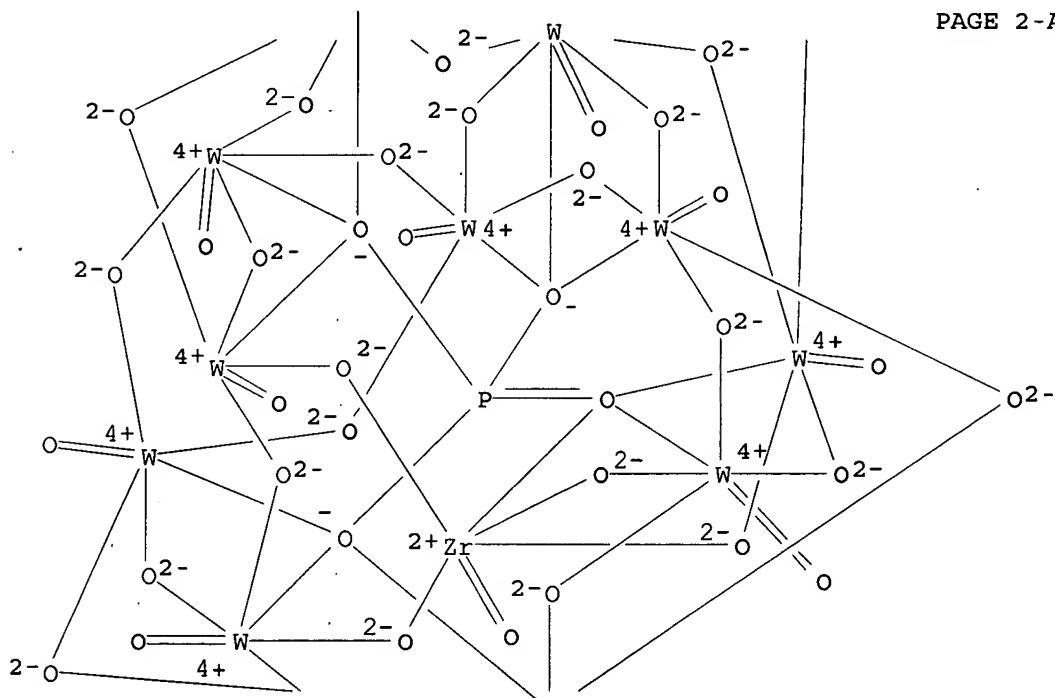


PAGE 3-A

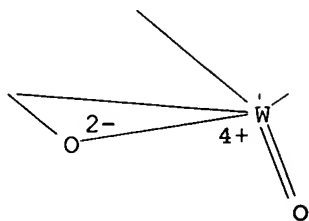
● 5 H<sup>+</sup>

```
RN      146066-47-9   HCAPLUS  
CN      Zirconate(5-), (eicosa-μ-oxoundeca- $\mu$ -oxundecatungstate) tetra-μ-  
        oxooxo[μ12-[phosphato(3-) -κO:κO:κO:κO':κO  
        ':κO':κO'':κO''':κO''':κO''':κO'''':κapp  
        a.O''']] -, pentahydrogen (9CI)    (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



PAGE 3-A

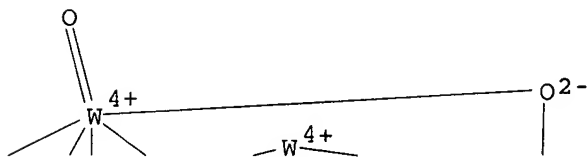
● 5 H<sup>+</sup>

```

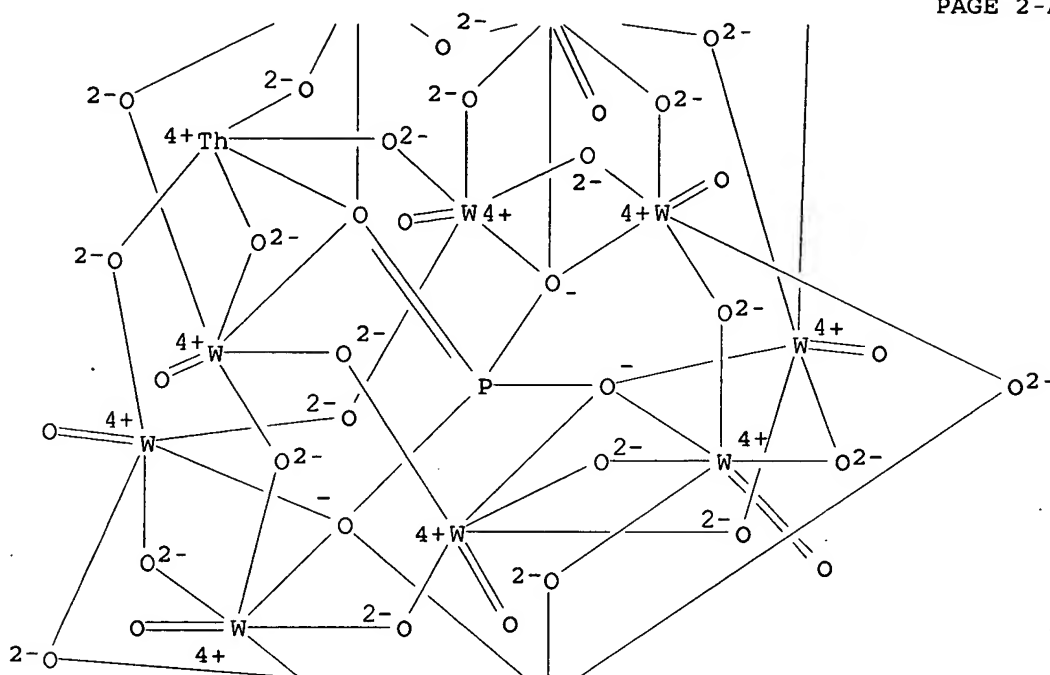
RN      406939-02-4      HCAPLUS
CN      Thorate(3-), (eicosa-μ-oxoundeca-oxoundecatungstate)tetra-μ-
      oxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':.
      kappa-O:κO':κO':κO':κO':κO':κO':κO
      ']]-, trihydrogen(9CI) (CA INDEX NAME)

```

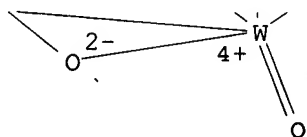
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

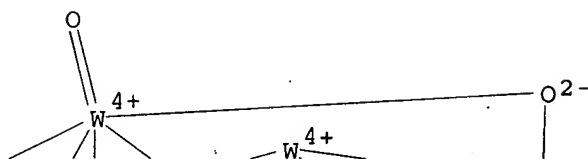
L32 ANSWER 32 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2002:10411 HCAPLUS  
DN 136:55557  
TI Synthesis of aliphatic esters from carboxylic acids and olefins using  
heteropoly acid catalysts  
IN Ng, Flora T. T.; Te, Mure  
PA BP Chemicals Limited, UK  
SO PCT Int. Appl., 11 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----

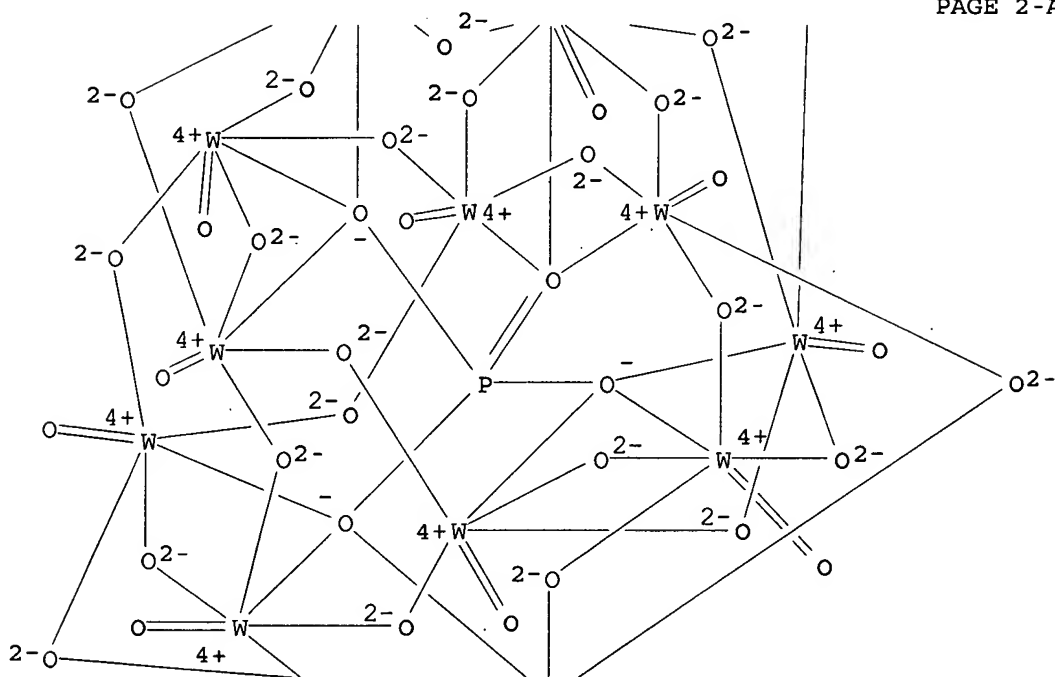
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PI WO 2002000591 A1 20020103 WO 2001-GB2632 20010613 <--  
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,  
LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,  
RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,  
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,  
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,  
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
PRAI GB 2000-15568 A 20000627 <--  
AB A process for the preparation of lower aliphatic esters (e.g., Et acetate)  
comprises reacting a lower olefin (e.g., ethylene) with a saturated lower  
aliphatic monocarboxylic acid (e.g., acetic acid) in the presence of a  
supported catalyst **composition** comprising a silicon-containing heteropoly  
acid (e.g., silicotungstic acid) and a phosphorus-containing heteropoly acid  
(e.g., phosphotungstic acid).  
IC ICM C07C067-04  
ICS C07C069-02; C07C069-14  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 23, 48, 67  
IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
12-Molybdophosphoric acid 12027-12-2, 12-Molybdosilicic acid  
12027-38-2, 12-Tungstosilicic acid 12704-86-8 37340-70-8,  
Potassium tungstophosphate 39469-90-4 59088-14-1 142165-04-6  
RL: CAT (Catalyst use); USES (Uses)  
(synthesis of aliphatic esters from carboxylic acids and olefins using  
heteropoly acid catalysts)  
IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
12-Molybdophosphoric acid 12027-12-2, 12-Molybdosilicic acid  
12027-38-2, 12-Tungstosilicic acid  
RL: CAT (Catalyst use); USES (Uses)  
(synthesis of aliphatic esters from carboxylic acids and olefins using  
heteropoly acid catalysts)  
RN 1343-93-7 HCAPLUS  
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':.kappa  
.O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

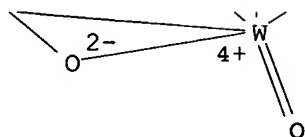
PAGE 1-A



PAGE 2-A

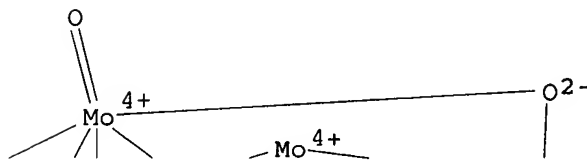


PAGE 3-A

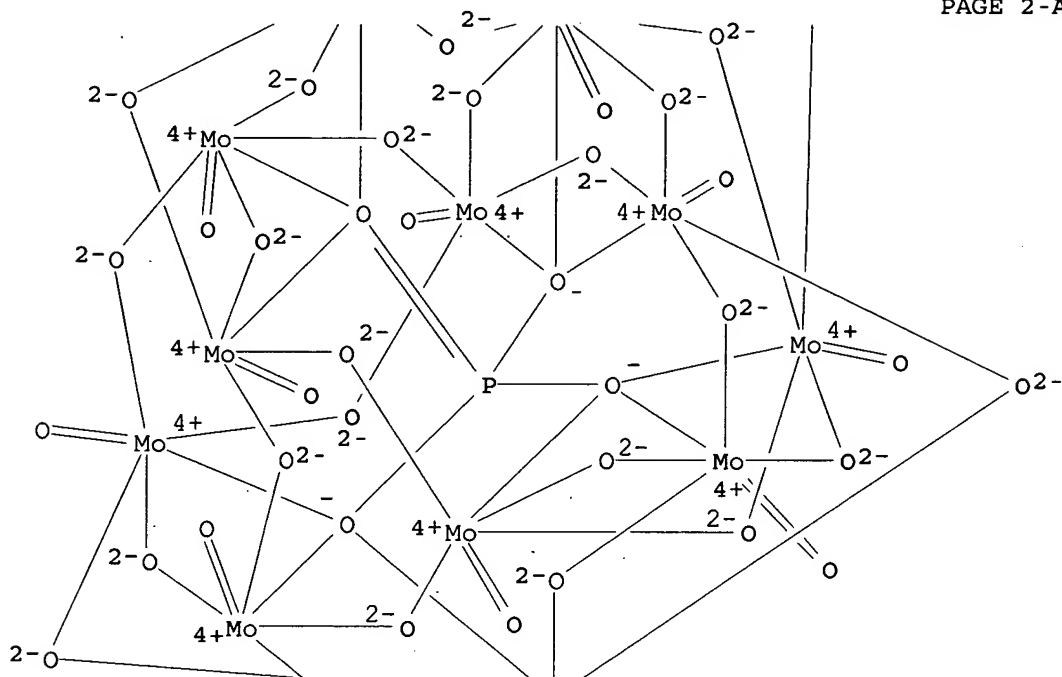
●3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdoxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

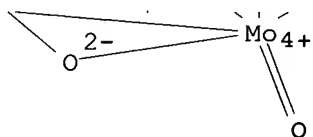
PAGE 1-A



PAGE 2-A



PAGE 3-A



● 3 H<sup>+</sup>

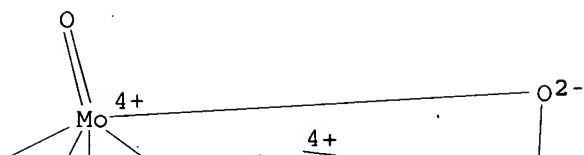
```

RN      12027-12-2   HCAPLUS
CN      Molybdate(4-), [mu12-[orthosilicato(4-)-κO:κO:κO:..kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'':κO'':κO'':κO'':κO'':κO'':κO'':.tetra
(9CI)   (CA INDEX NAME)

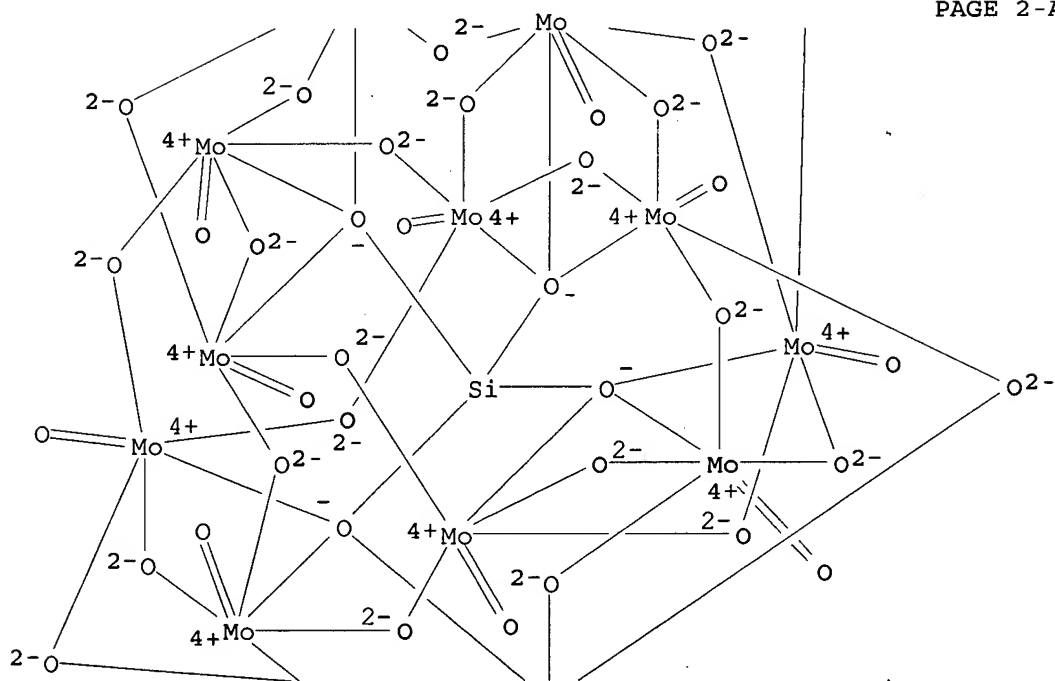
```



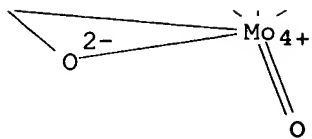
PAGE 1-A



PAGE 2-A



PAGE 3-A



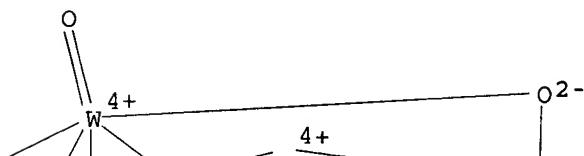
●<sub>4</sub> H<sup>+</sup>

```

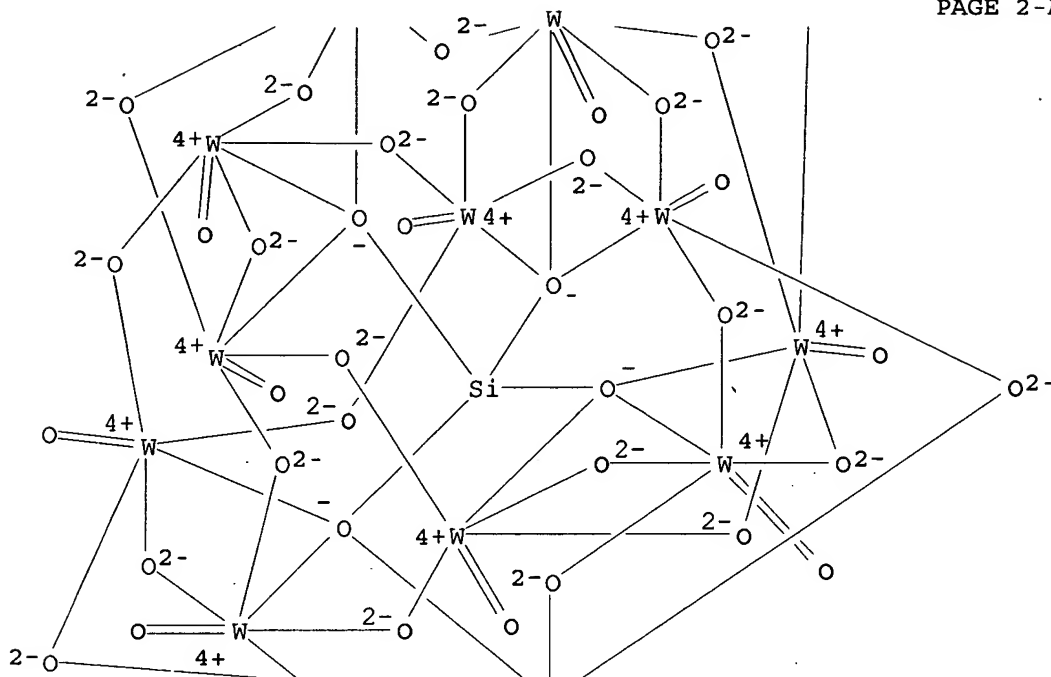
RN      12027-38-2. HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:..kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'']]tetracosα-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

```

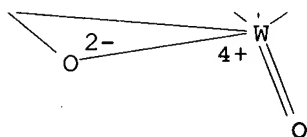
PAGE 1-A



PAGE 2-A



PAGE 3-A

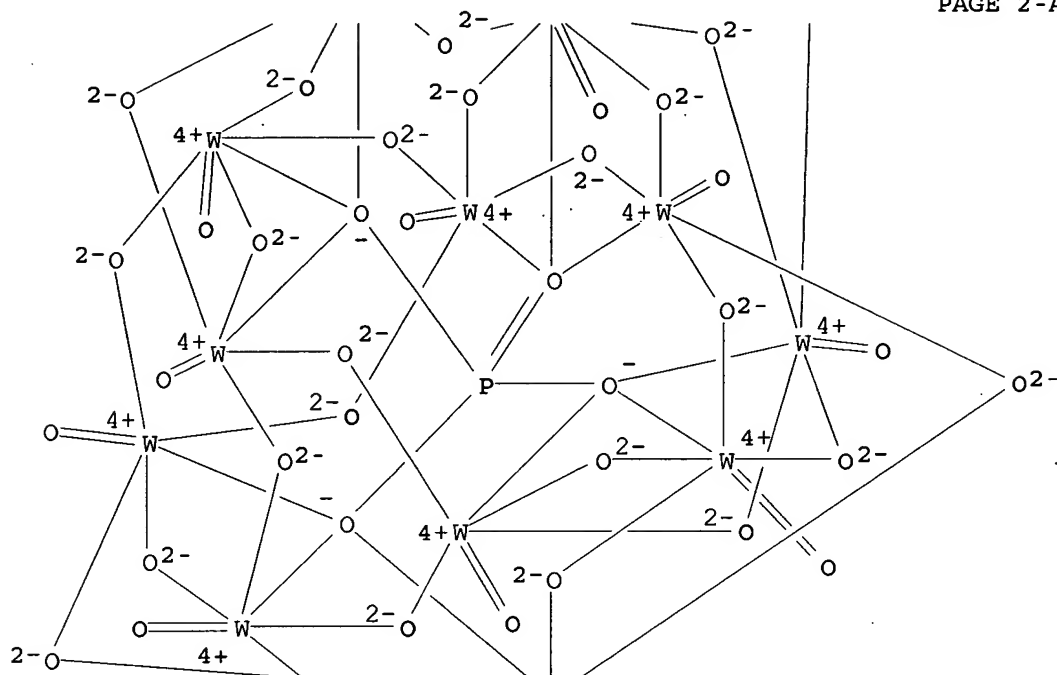
● 4 H<sup>+</sup>

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

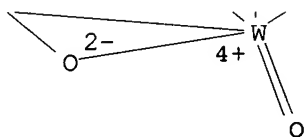
L32 ANSWER 33 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:919925 HCAPLUS  
DN 136:247782  
TI L-sorbose acetonation catalyzed by heteropolyacids  
AU Nadtochii, M. A.; Burova, L. E.; Vasil'eva, I. B.; Melent'eva, T. A.  
CS State Research Institute of Vitamins, State Unitary Enterprise, Moscow, Russia  
SO Pharmaceutical Chemistry Journal (Translation of Khimiko-Farmatsevticheskii Zhurnal) (2001), 35(5), 282-283  
CODEN: PCJOAU; ISSN: 0091-150X  
PB Kluwer Academic/Consultants Bureau  
DT Journal  
LA English  
OS CASREACT 136:247782



PAGE 2-A

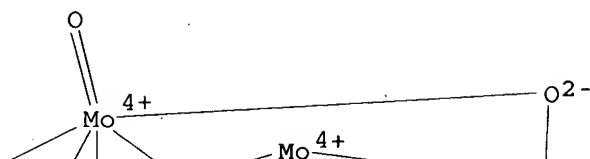


PAGE 3-A

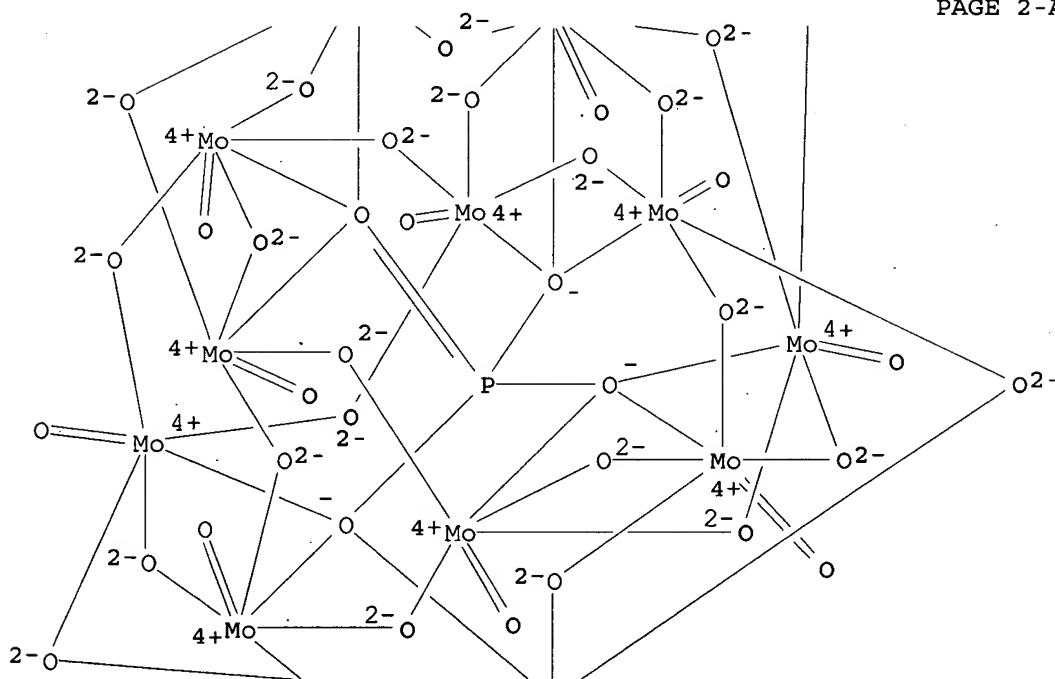
●3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

PAGE 1-A

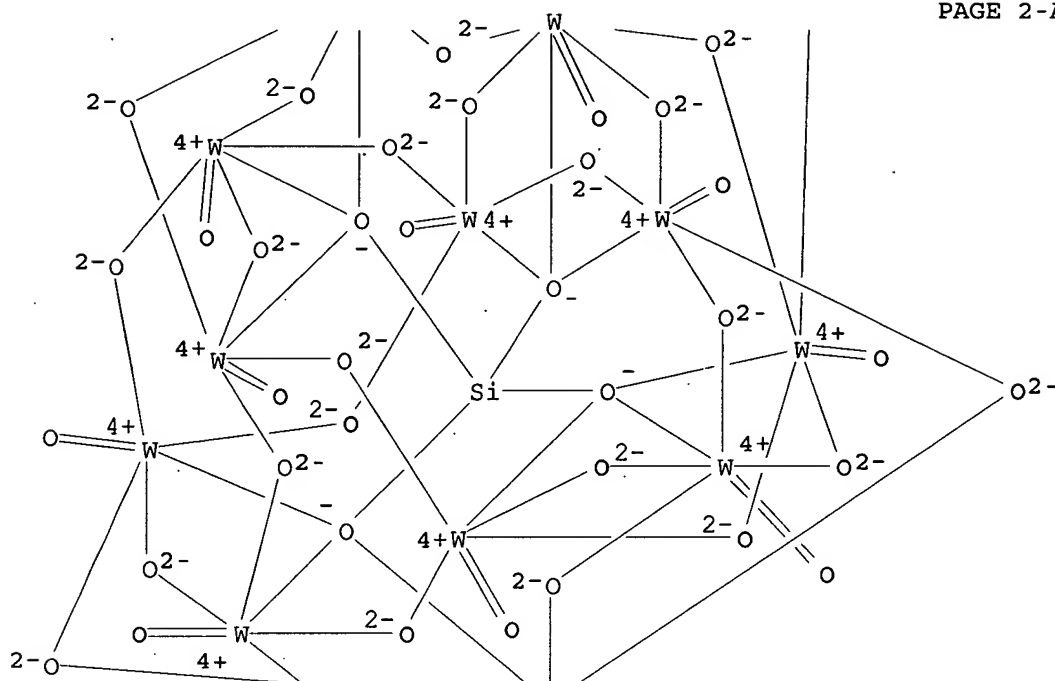


PAGE 2-A

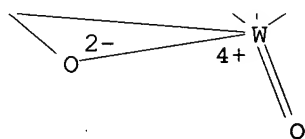




PAGE 2-A



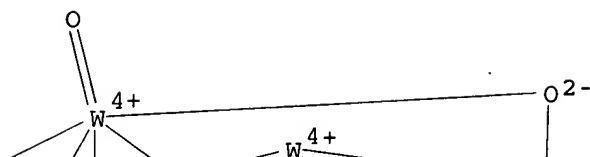
PAGE 3-A

● 4 H<sup>+</sup>

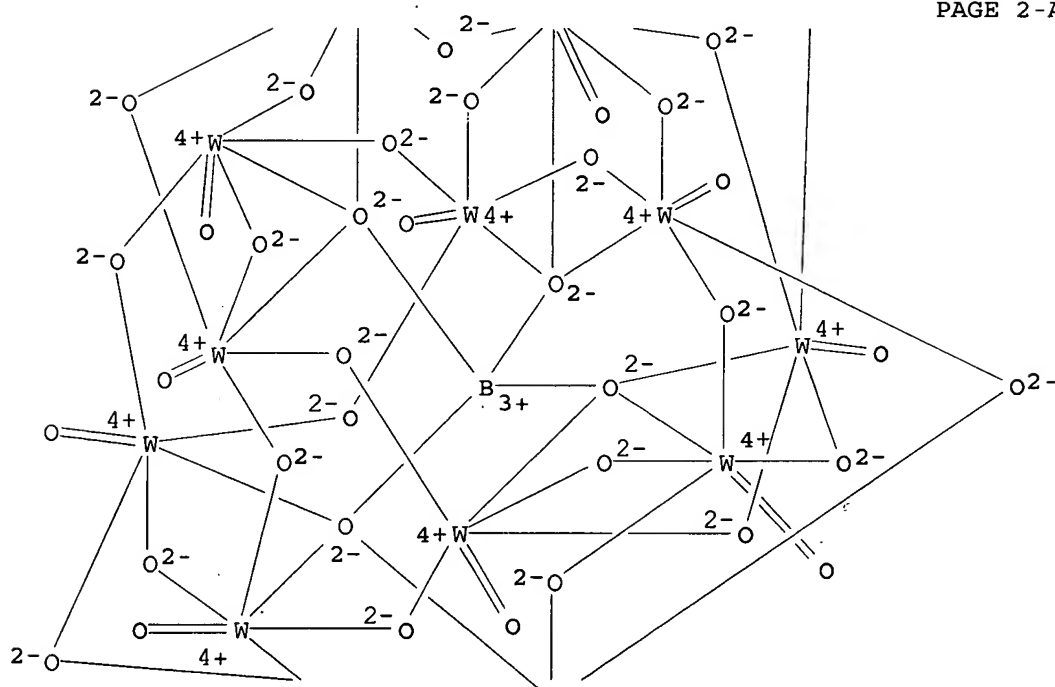
RN 12297-12-0 HCAPLUS  
 CN Tungstate(5-), tetracosam-oxododecaoxo[μ12-[tetrahydroxyborato(5-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-,  
 pentahydrogen (9CI) (CA INDEX NAME)

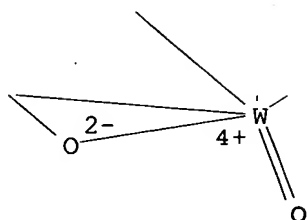


PAGE 1-A



PAGE 2-A





PAGE 3-A

●5 H<sup>+</sup>

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

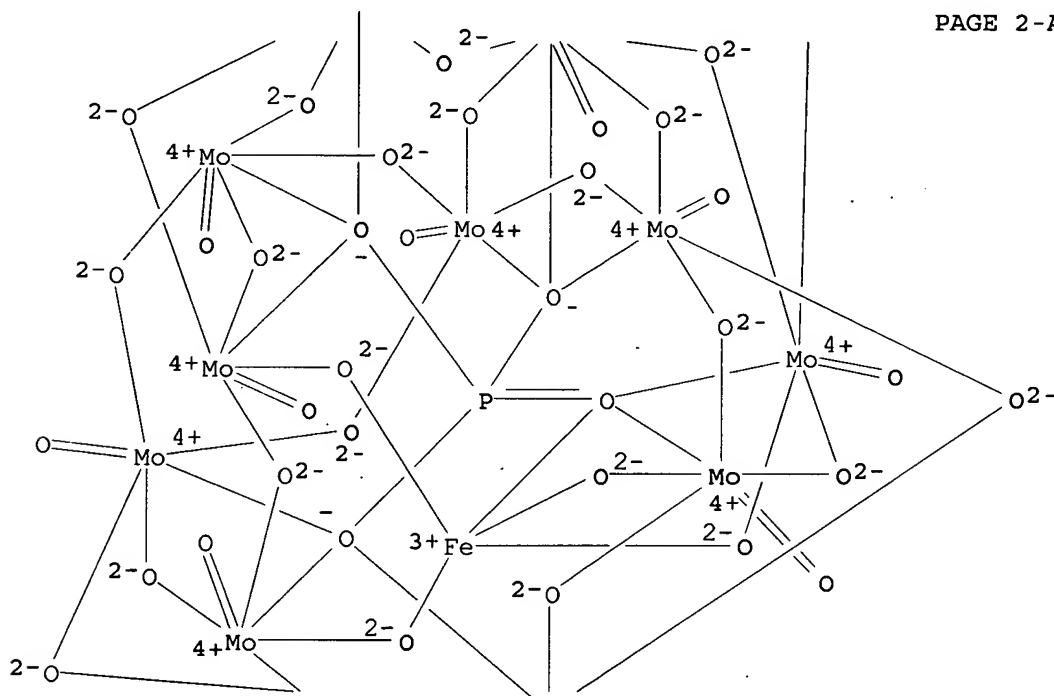
L32 ANSWER 34 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:896242 HCAPLUS  
DN 136:247923  
TI Stability of iron in the Keggin anion of heteropoly acid catalysts for selective oxidation of isobutane  
AU Knapp, Carlos; Ui, Toshiaki; Nagai, Koichi; Mizuno, Noritaka  
CS Basic Chemicals Research Laboratory, Sumitomo Chemical Co. Ltd., Japan  
Chemical Industry Association, Ehime, Niihama, 792-8521, Japan  
SO Catalysis Today (2001), 71(1-2), 111-119  
CODEN: CATTEA; ISSN: 0920-5861  
PB Elsevier Science B.V.  
DT Journal  
LA English  
AB The thermal stability and isobutane oxidation activity of catalysts with Fe selectively placed in the Keggin anion have been studied. For the Cs<sub>3</sub>H<sub>12</sub>PMo<sub>11</sub>FeO<sub>39</sub> salt, Fe was released from the Keggin structure above 570 K, as observed by FT-IR spectroscopy. However, in the presence of NH<sub>4</sub><sup>+</sup> as counter-cation, Fe was released from the Keggin anion at 470 K, simultaneously catalyzing the elimination of NH<sub>4</sub><sup>+</sup>. Fe-substituted catalysts with Fe contents of 0-1, where ammonium was removed during the heat pre-treatment, showed a neg. influence of Fe on the selectivity to methacrylic acid (MAA) and on the isobutane conversion. The influence of the initial position of Fe, inside or outside the Keggin anion, was studied. A catalyst in which Fe was initially as counter-cation, Cs<sub>1.5</sub>Fe<sub>0.5</sub>(NH<sub>4</sub>)<sub>2.0</sub>PMo<sub>12</sub>O<sub>40</sub>, presented a 21% selectivity to MAA at 633 K after 20 h in operation, against a 15% selectivity of a catalyst that had a similar composition but with Fe initially inside the Keggin anion, Cs<sub>1.5</sub>(NH<sub>4</sub>)<sub>2.0</sub>PMo<sub>11.5</sub>Fe<sub>0.5</sub>O<sub>39.5</sub>. Both catalysts showed similar isobutane conversions of ca. 8%. The catalysts underwent changes during the first few hours in a reaction that led to an increase of the selectivity to MAA in both the cases. However, the active sites derived from the lacunary species generated after release of Fe from the Keggin anion were less selective than those derived from 12-molybdophosphoric units.  
CC 35-2 (Chemistry of Synthetic High Polymers)  
IT 62493-67-8 404582-81-6, Ammonium iron molybdenum oxide phosphate ((NH<sub>4</sub>)<sub>3.5</sub>Fe<sub>0.5</sub>Mo<sub>11.5</sub>O<sub>35.5</sub>(PO<sub>4</sub>)) 404582-82-7 404582-83-8 404841-89-0 404841-90-3  
RL: CAT (Catalyst use); USES (Uses)  
(stability of iron in the Keggin anion of heteropoly acid catalysts for selective oxidation of isobutane)  
IT 554-13-2, Dilithium carbonate 10421-48-4, Ferric nitrate 12026-57-2, H<sub>3</sub>PMo<sub>12</sub>O<sub>40</sub>

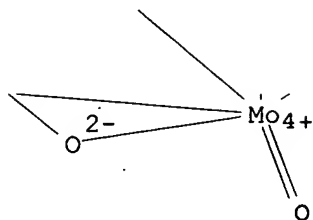
(stability of iron in the Keggin anion of heteropoly acid catalysts for selective oxidation of isobutane)

(stability of iron in the Keggin anion of heteropoly acid catalysts for selective oxidation of isobutane)

CN Molybdate (4-), ferratetetracosamolybdate [μ12-[phosphato (3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O':κO'':κO''':κO''':κO''']]undeca-, tetraammonium (9CI) (CA INDEX NAME)

PAGE 2-A





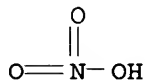
PAGE 3-A

●4 NH<sub>4</sub><sup>+</sup>

IT 10421-48-4, Ferric nitrate 12026-57-2,  
 H3PMo12O40  
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or  
 reagent); USES (Uses)  
 (stability of iron in the Keggin anion of heteropoly acid  
 catalysts for selective oxidation of isobutane)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)

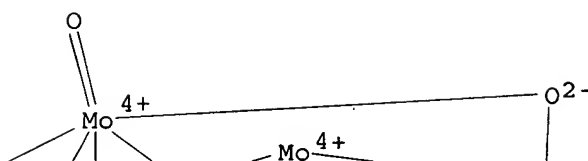


●1/3 Fe(III)

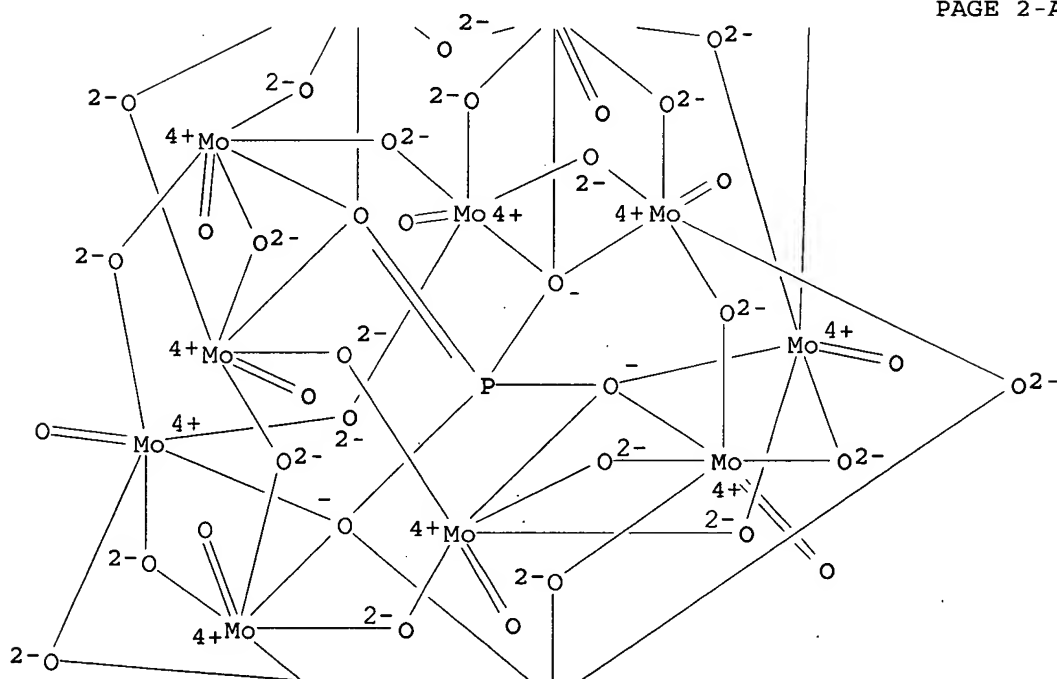
RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

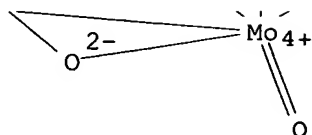
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

RE.CNT 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 35 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:651061 HCAPLUS

DN 136:88089

TI Oxidation reactivities of dibenzothiophenes in polyoxometalate/H<sub>2</sub>O<sub>2</sub> and formic acid/H<sub>2</sub>O<sub>2</sub> systems

AU Te, M.; Fairbridge, C.; Ring, Z.

CS National Centre for Upgrading Technology, Devon, AB, T9G 1A8, Can.

SO Applied Catalysis, A: General (2001), 219(1-2), 267-280

CODEN: ACAGE4; ISSN: 0926-860X

PB Elsevier Science B.V.

DT Journal

LA English

AB Dibenzothiophene, 4-methyldibenzothiophene, and 4,6-dimethyldibenzothiophene are typical thiophenic sulfur compds. that exist in diesel fuels. Using toluene solns. of the model compds., expts. were carried out to compare the reactivity of the different dibenzothiophenes in oxidation reactions, a key step for oxidative desulfurization. A series of polyoxometalate/H<sub>2</sub>O<sub>2</sub> systems were evaluated for dibenzothiophene oxidation. The H<sub>2</sub>O<sub>2</sub> solns. of phosphotungstic acid and its salt were very active catalyst systems for the model compound oxidation, while their molybdenum counterpart systems were much less active. The H<sub>2</sub>O<sub>2</sub> solns. of silicotungstic and silicomolybdic compds. were the least active catalyst systems for the reaction. Oxidation reactivities decreased in the order of dibenzothiophene > 4-methyldibenzothiophene > 4,6-dimethyldibenzothiophene, the same reactivity trend that exists in HDS. However, the oxidation of the dibenzothiophenes was achieved under mild reaction conditions and it was easy to increase reaction temperature or reaction time to achieve high oxidation conversions, even for the least reactive 4,6-dimethyldibenzothiophene. Apparent activation energies of dibenzothiophene, 4-methyldibenzothiophene, and 4,6-dimethyldibenzothiophene oxidation were 53.8, 56.0, and 58.7 kJ/mol, resp. These activation energies indicated a decrease in reactivity of dibenzothiophenes as Me substitutes increased at the 4 and 6 positions on dibenzothiophene rings. Interestingly, in a formic acid/H<sub>2</sub>O<sub>2</sub> system, the oxidation reactivity of the dibenzothiophenes showed the reverse trend, suggesting that steric hindrance might play a role when bulky polyoxoperoxo species, which likely form in a hydrogen peroxide solution, act as catalysts.

CC 51-12 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 59

IT 1313-30-0 1343-93-7 12026-57-2

12026-98-1 12027-12-2 12027-38-2

RL: CAT (Catalyst use); USES (Uses)

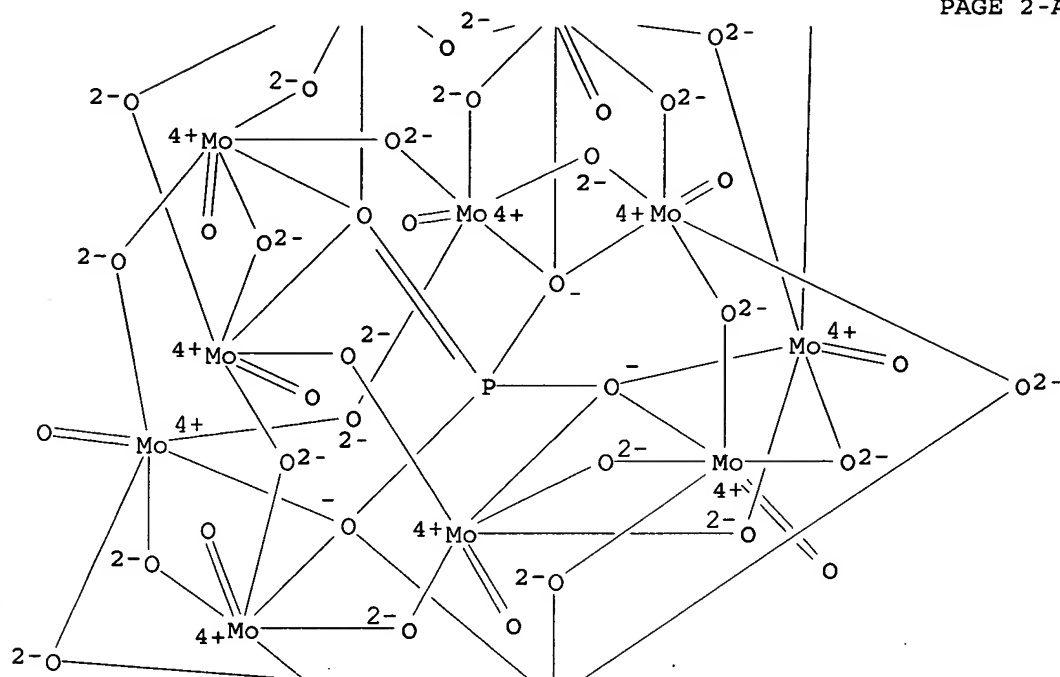
(oxidation reactivities of dibenzothiophenes in polyoxometalate/H<sub>2</sub>O<sub>2</sub> and formic acid/H<sub>2</sub>O<sub>2</sub> systems)

```
IT      1313-30-0 1343-93-7 12026-57-2  
        12026-98-1 12027-12-2 12027-38-2  
        RL: CAT (Catalyst use); USES (Uses)  
          (oxidation reactivities of dibenzothiophenes in polyoxometalate  
            /H2O2 and formic acid/H2O2 systems)
```

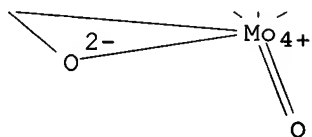
RN 1313-30-0 HCAPLUS

CN Molybdate(3-), tetracosamolybdododecaoxo[μ<sub>12</sub>-[phosphato(3-)-  
 .O':κO':κO':κO':κO':κO'::kappa  
 .O':κO'':κO'':κO'':κO'']]dodeca-, trisodium  
 (9CI) (CA INDEX NAME)

PAGE 2-A



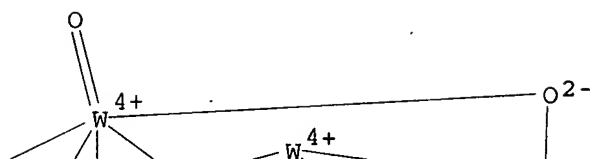
PAGE 3-A

● 3 Na<sup>+</sup>

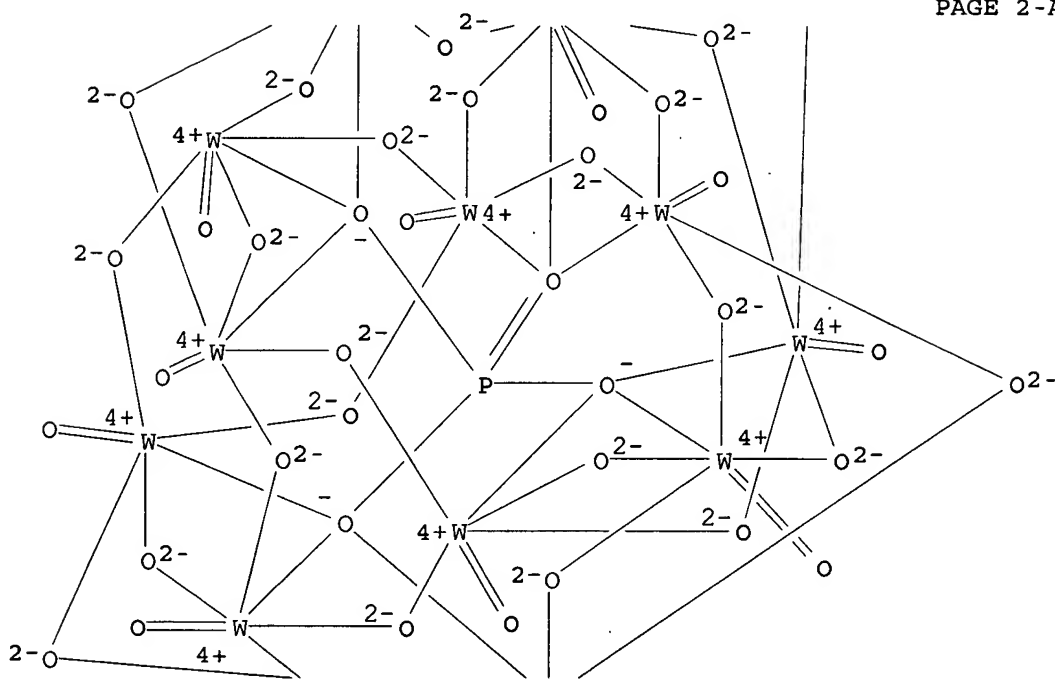
RN 1343-93-7 HCAPLUS  
 CN Tungstate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)



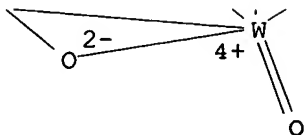
PAGE 1-A



PAGE 2-A

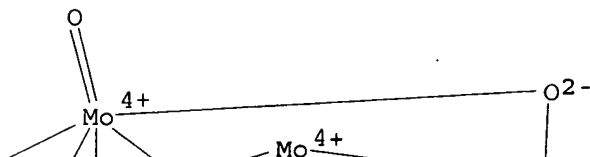


PAGE 3-A

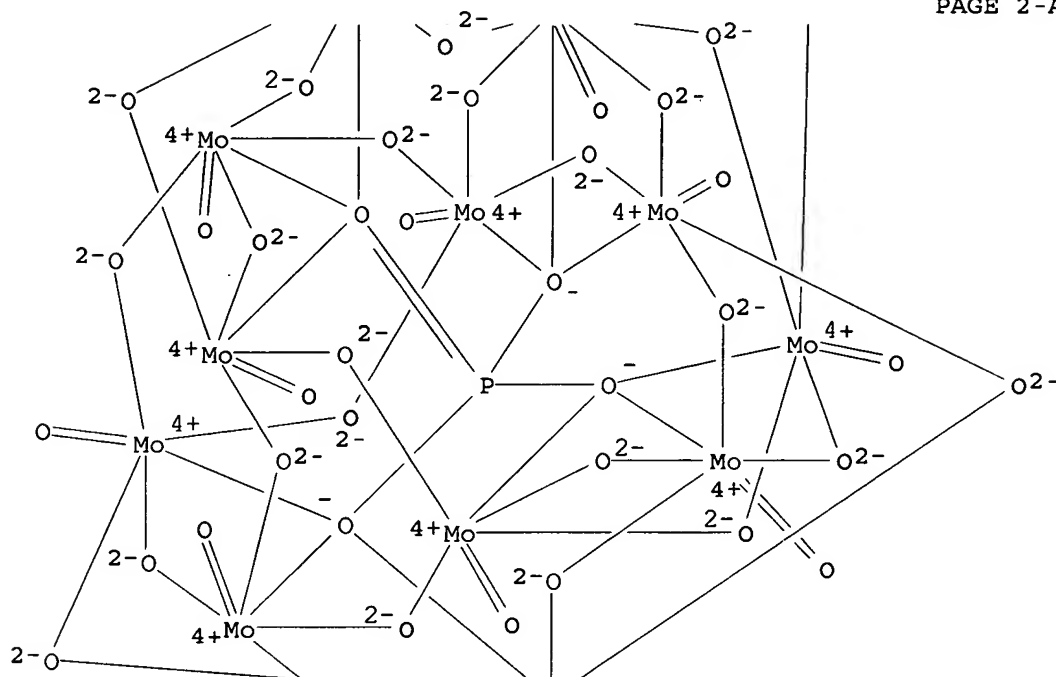
● 3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdoxido[μ<sub>12</sub>-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

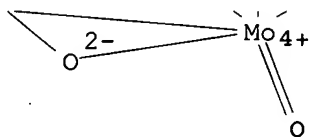
PAGE 1-A



PAGE 2-A

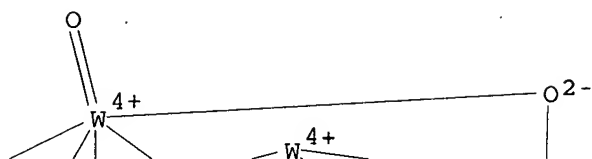


PAGE 3-A

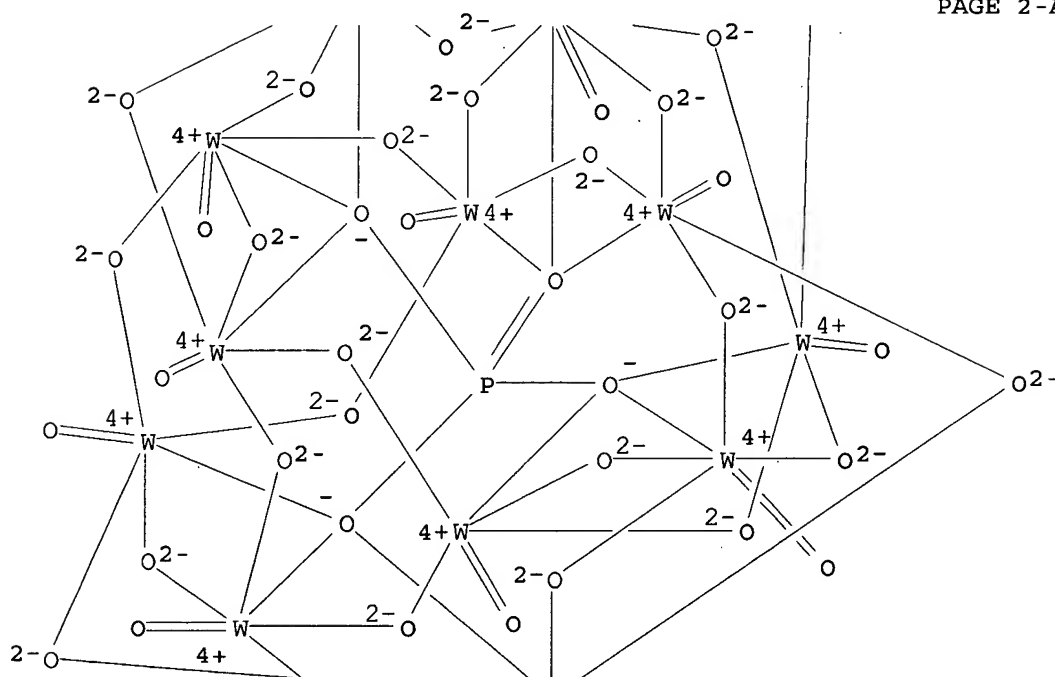
● 3 H<sup>+</sup>

RN 12026-98-1 HCAPLUS  
 CN Tungstate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trisodium  
 (9CI) (CA INDEX NAME)

PAGE 1-A.



PAGE 2-A



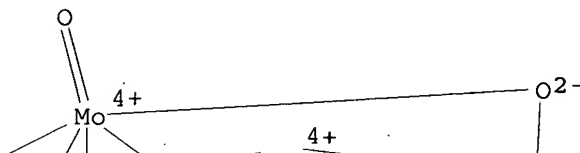
● 3 Na<sup>+</sup>

```

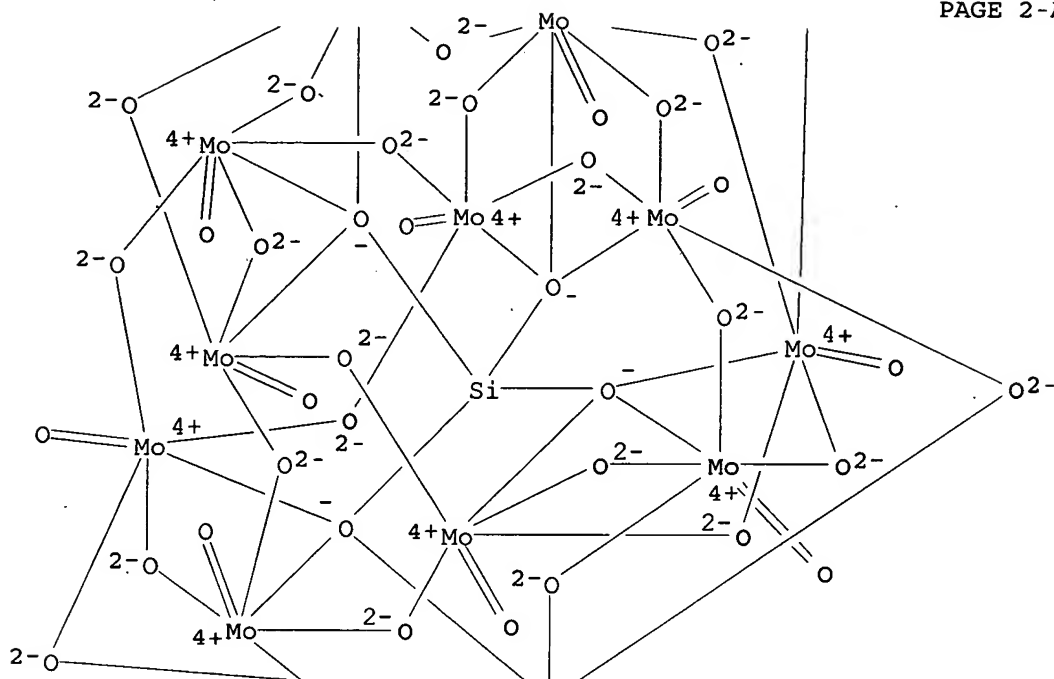
RN      12027-12-2   HCAPLUS
CN      Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'']]tetracosα-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

```

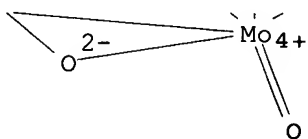
PAGE 1-A



PAGE 2-A



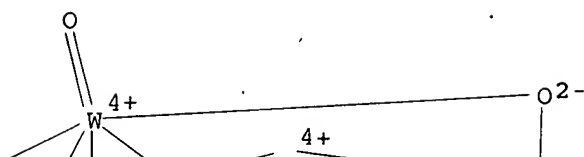
PAGE 3-A



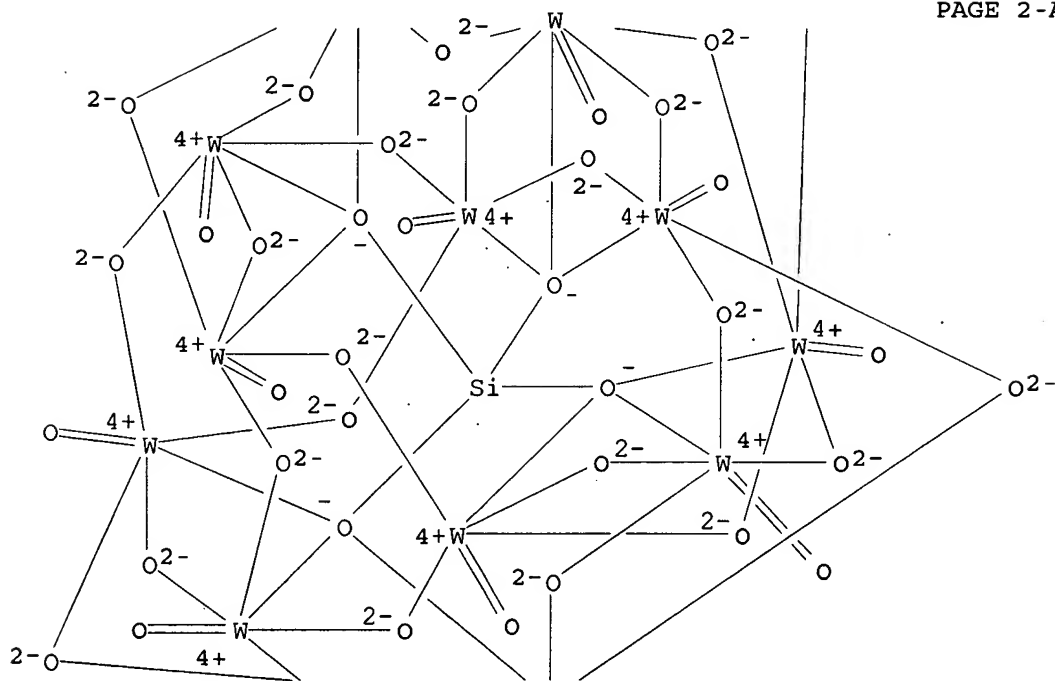
●<sub>4</sub> H<sup>+</sup>

```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
       a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
       pa.O'''':κO''']]tetracosα-μ-oxododecaoxododecα-, tetrahydrogen
       (9CI)        (CA INDEX NAME)
```

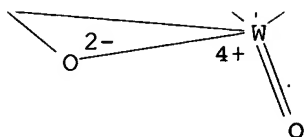
PAGE 1-A



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

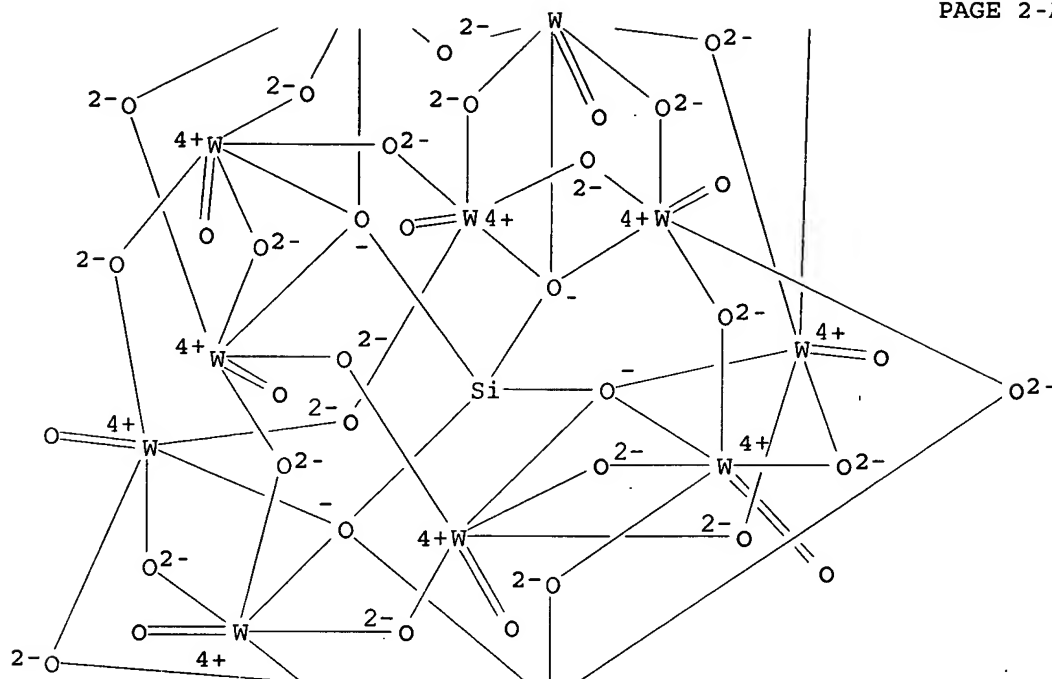
RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

- L32 ANSWER 36 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:610535 HCAPLUS  
DN 135:332707  
TI Direct catalytic oxidation of ethylene to acetic acid. II. Choosing the catalyst manufacture conditions  
AU Yao, Jun-pin; Xu, Pei-ruo; Xu, Zheng-yong; Zhu, Zhi-hua  
CS Chemical Engineering College, ECUST, Shanghai, 200237, Peop. Rep. China  
SO Huadong Ligong Daxue Xuebao (2001), 27(3), 230-233, 237  
CODEN: HLIKEV; ISSN: 1006-3080  
PB Huadong Ligong Daxue Xuebao Bianjibu  
DT Journal  
LA Chinese  
AB In the research of direct oxidation of ethylene to acetic acid, the effect of manufacture conditions on the performance of Pd-HSiW-Cr-Te/SiO<sub>3</sub> has been studied, and the catalyst was investigated by XRD (x-ray diffraction), XPS, TEM techniques. SiO<sub>2</sub> calcining temperature, Na<sub>2</sub>PdCl<sub>4</sub> maceration time and catalyst activating procedure were the prominent factors affecting the performance of the catalyst. SiO<sub>2</sub> calcined at 600° compared with 800°, the former was preferred, which could provide suitable pore diameter and pore distribution. If Na<sub>2</sub>PdCl<sub>4</sub> maceration time was not enough, the catalyst activity was bad, however, too long time was unfavorable for the selectivity of acetic acid. The appropriate maceration time was 30 h. The catalyst must be activated with mixture gas of C<sub>2</sub>H<sub>4</sub>, O<sub>2</sub> and N<sub>2</sub>. The composition of the activating gas was C<sub>2</sub>H<sub>4</sub>:O<sub>2</sub>:N<sub>2</sub> = 71:9:20 (mol ratio), and the activating temperature was 220°. During the activating procedure the speed of temperature increase should be moderate. Too quick temperature increase would lead to active component to be agglutinated seriously. By choosing these conditions, the performance of the catalyst was improved. When the reaction conditions were as follows: T = 190°, p = 0.80 MPa, SV (space velocity) = 4 000 h<sup>-1</sup>, and the composition of reaction mixture gas was C<sub>2</sub>H<sub>4</sub>:O<sub>2</sub>:N<sub>2</sub>:H<sub>2</sub>O = 50:6:14:30 (mol ratio), the conversion of C<sub>2</sub>H<sub>4</sub> and the selectivity of acetic acid could reach 4.0% and 86.1% resp., and the byproducts CO<sub>2</sub> and CH<sub>3</sub>CHO decreased to 11.7% and 1.0%. The once-through space time yield of acetic acid could reach 185.0 g/(L·h).  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 67  
IT 7440-05-3, Palladium, uses 7440-47-3, Chromium, uses 7631-86-9, Silica, uses 12027-38-2, 12-Tungstosilicic acid 13494-80-9, Tellurium, uses  
RL: CAT (Catalyst use); USES (Uses)  
(direct catalytic oxidation of ethylene to acetic acid with palladium heteropoly acid catalyst)  
IT 12027-38-2, 12-Tungstosilicic acid  
RL: CAT (Catalyst use); USES (Uses)

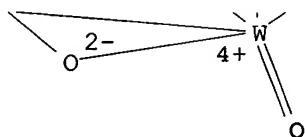




PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

L32 ANSWER 37 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2001:549495 HCAPLUS  
 DN 135:303525  
 TI A <sup>31</sup>P-NMR study of peroxo species formed during oxidation of cyclohexene with hydrogen peroxide in tri-n-butyl phosphate catalyzed by heteropolyacids  
 AU Hashimoto, Masato; Itoh, Koshi; Lee, Kwan Young; Misono, Makoto  
 CS Department of Applied Chemistry, Graduate School of Engineering, The University of Tokyo, Tokyo, 113-8656, Japan  
 SO Topics in Catalysis (2001), 15(2-4), 265-271  
 CODEN: TOCAFI; ISSN: 1022-5528  
 PB Kluwer Academic/Plenum Publishers  
 DT Journal  
 LA English  
 AB In the oxidation of cyclohexene with H<sub>2</sub>O<sub>2</sub> in monophasic tri-n-butylphosphate (TBP) solution catalyzed by Keggin-type 12-heteropolyacids, i.e.,

H3PMo12-xWxO40 (x = 0-12), several peroxo species were observed by 31P-NMR spectroscopy in lower field than the original heteropolyacids. Their composition varied regularly with that of the starting catalyst. The P-containing peroxo species formed was deduced as [PM4O8(O2)8]3- (M = Mo, W). The peroxo species formed more easily with a decrease in the W content, x of H3PMo12-xWxO40. It was further indicated from the reactivity with cyclohexene and the comparison with catalytic performance that W-rich peroxo species were catalytically more active than Mo-rich peroxo species for the oxidation of cyclohexene in this reaction system.

CC 22-7 (Physical Organic Chemistry)

IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
12-Molybdophosphoric acid 12411-60-8, Molybdotungstophosphoric acid (H3Mo6PW6O40) 55467-62-4 63950-64-1,  
Molybdotungstophosphoric acid (H3MoPW11O40) 69106-78-1,  
Molybdotungstophosphoric acid (H3Mo2PW10O40) 92627-46-8,  
Molybdotungstophosphoric acid (H3Mo7PW5O40) 92627-47-9,  
Molybdotungstophosphoric acid (H3Mo8PW4O40) 92627-49-1,  
Molybdotungstophosphoric acid (H3Mo9PW3O40) 92627-50-4,  
Molybdotungstophosphoric acid (H3Mo10PW2O40) 92627-51-5,  
Molybdotungstophosphoric acid (H3Mo11PW1O40) 93069-33-1,  
Molybdotungstophosphoric acid (H3Mo4PW8O40) 114760-21-3

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(a 31P-NMR study of peroxo species formed during oxidation of cyclohexene with hydrogen peroxide in tri-Bu phosphate catalyzed by heteropolyacids)

IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
12-Molybdophosphoric acid 12411-60-8, Molybdotungstophosphoric acid (H3Mo6PW6O40) 55467-62-4 63950-64-1,  
Molybdotungstophosphoric acid (H3MoPW11O40) 69106-78-1,  
Molybdotungstophosphoric acid (H3Mo2PW10O40) 92627-46-8,  
Molybdotungstophosphoric acid (H3Mo7PW5O40) 92627-47-9,  
Molybdotungstophosphoric acid (H3Mo8PW4O40) 92627-49-1,  
Molybdotungstophosphoric acid (H3Mo9PW3O40) 92627-50-4,  
Molybdotungstophosphoric acid (H3Mo10PW2O40) 92627-51-5,  
Molybdotungstophosphoric acid (H3Mo11PW1O40) 93069-33-1,  
Molybdotungstophosphoric acid (H3Mo4PW8O40) 114760-21-3

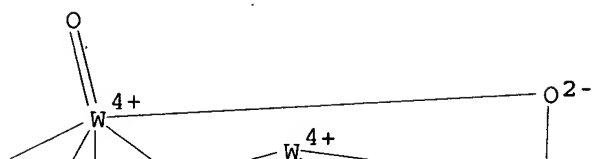
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(a 31P-NMR study of peroxo species formed during oxidation of cyclohexene with hydrogen peroxide in tri-Bu phosphate catalyzed by heteropolyacids)

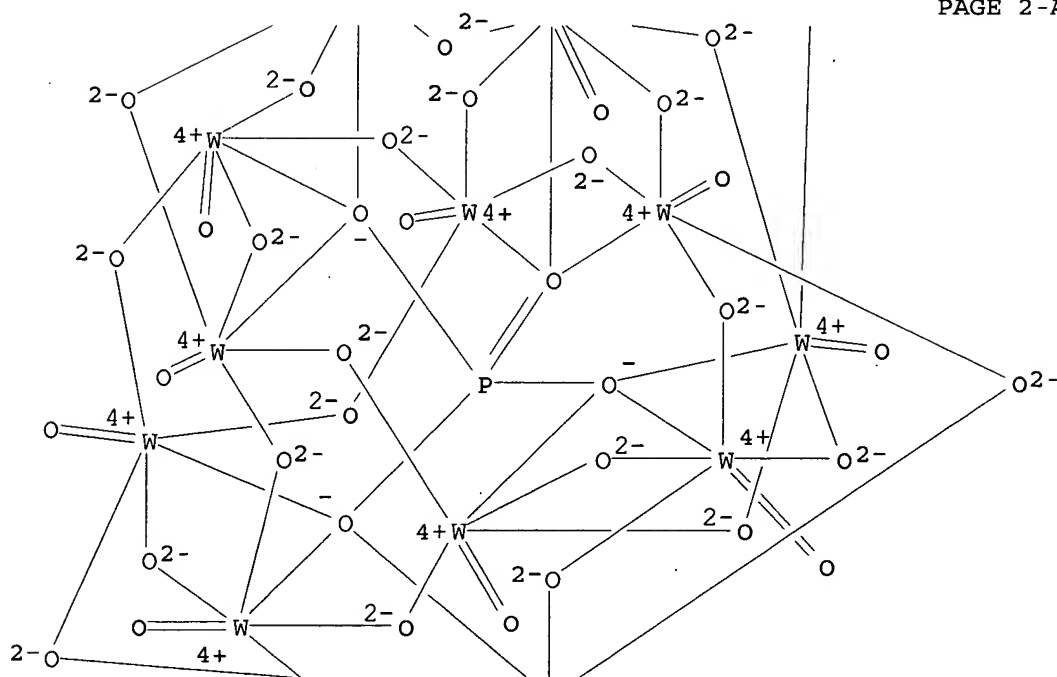
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-μ-oxododecaoxo [μ12- [phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

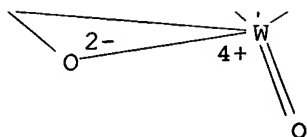
PAGE 1-A



PAGE 2-A



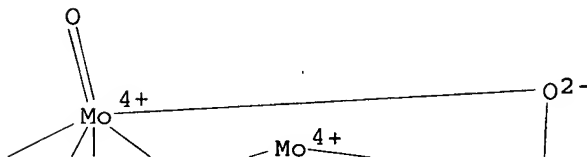
PAGE 3-A



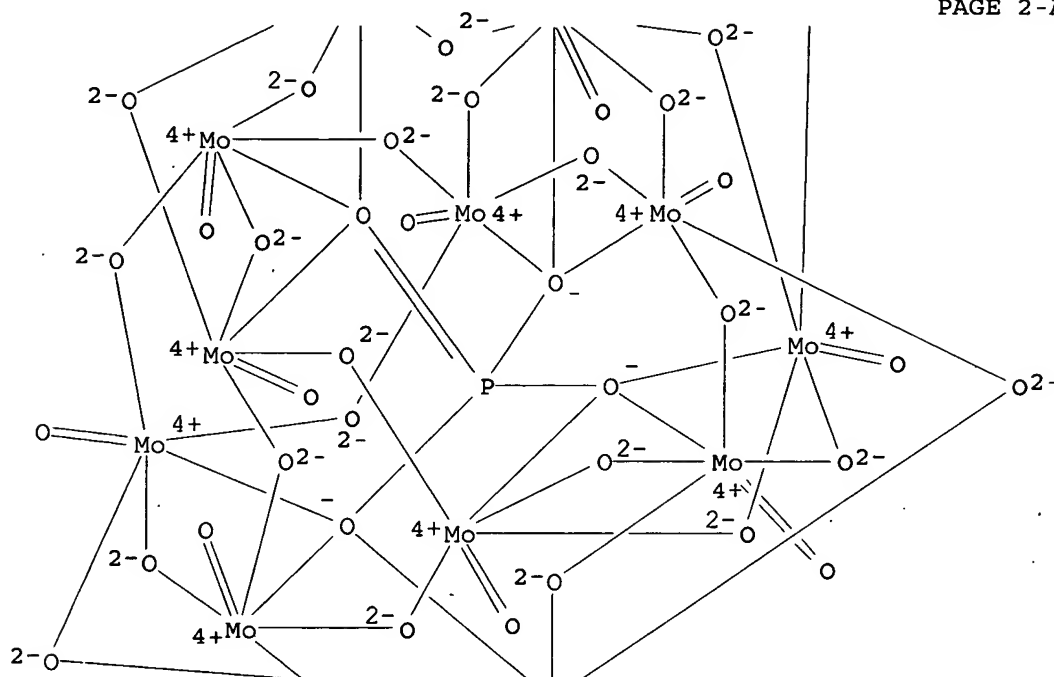
● 3 H<sup>+</sup>

```
RN      12026-57-2   HCAPLUS
CN      Molybdate(3-), tetracosamolybdato[μ12-[phosphato(3-) -
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen
(9CI)    (CA INDEX NAME)
```

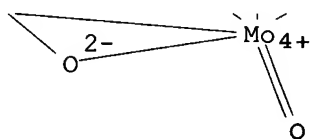
PAGE 1-A



PAGE 2-A



PAGE 3-A



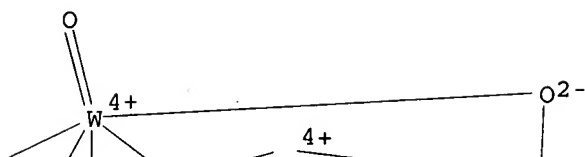
● 3 H<sup>+</sup>

```

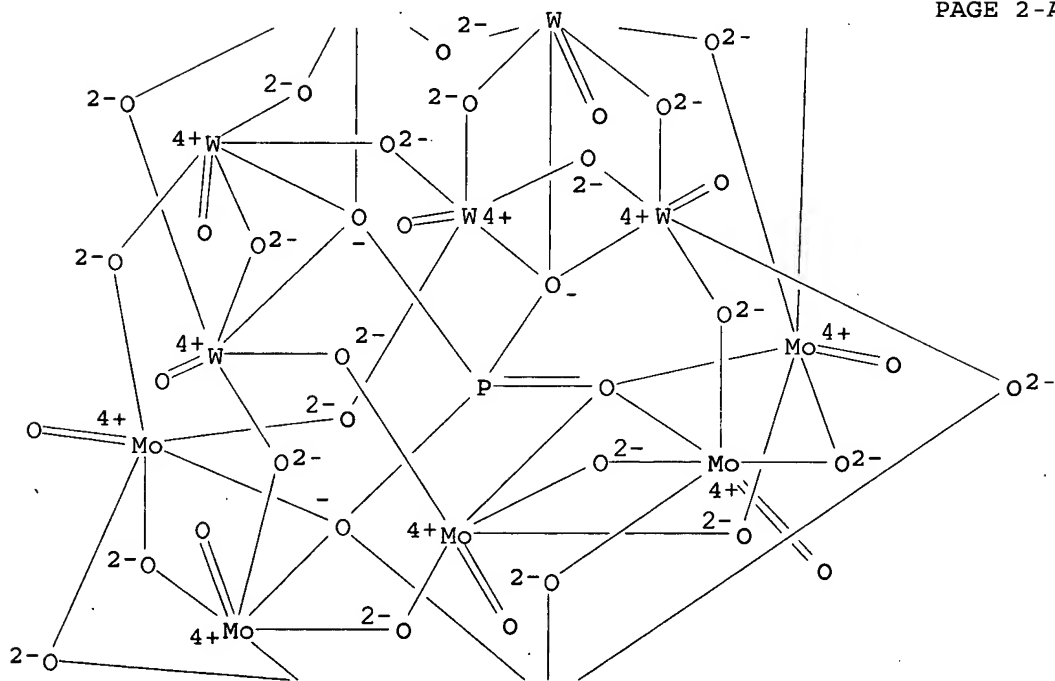
RN      12411-60-8   HCAPLUS
CN      Tungstate(3-), (octa- $\mu$ -oxohexaoxohexamolybdate)hexadeca- $\mu$ -
oxohexaoxo[ $\mu$ 12-[phosphato(3-)- $\kappa$ O: $\kappa$ O: $\kappa$ O: $\kappa$ O':..kap
pa.O': $\kappa$ O': $\kappa$ O''': $\kappa$ O''': $\kappa$ O''': $\kappa$ O''':..
kappa.O''']]hexa-, trihydrogen(9CI) (CA INDEX NAME)

```

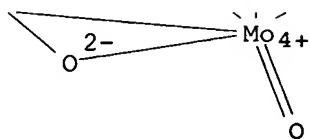
PAGE 1-A



PAGE 2-A



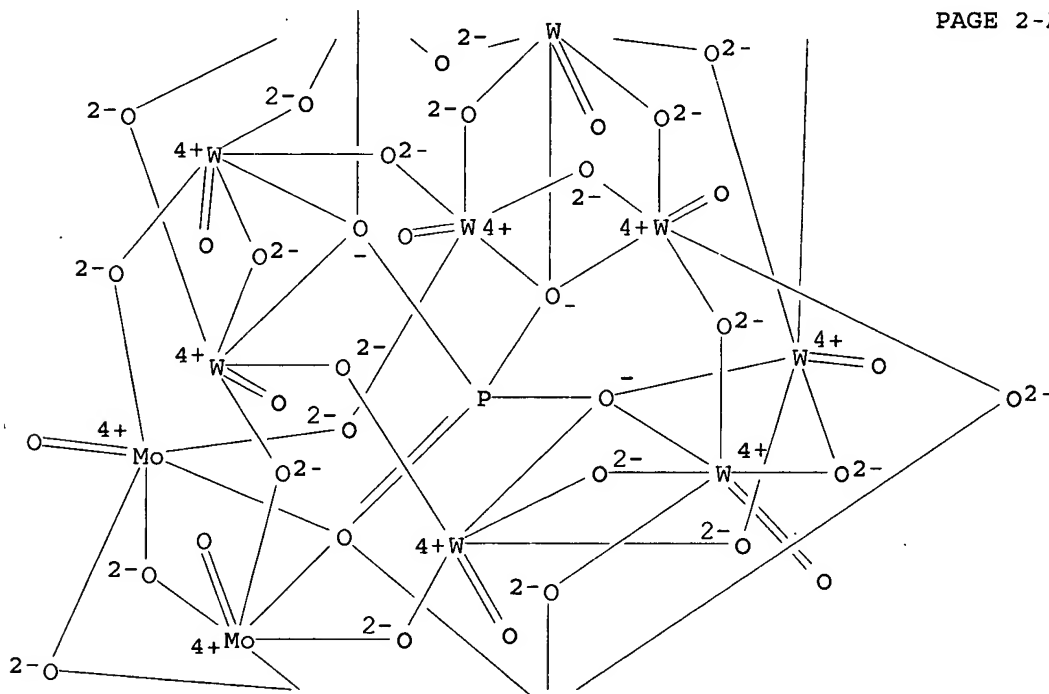
PAGE 3-A

 $\bullet_3 \text{H}^+$ 

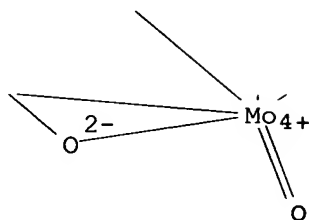
RN 55467-62-4 HCAPLUS  
CN Tungstate(3-), heneicosa-μ-oxonona-oxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'':κO'']](tri-μ-oxotrioxotrimolybdate)nona-, trihydrogen(9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A





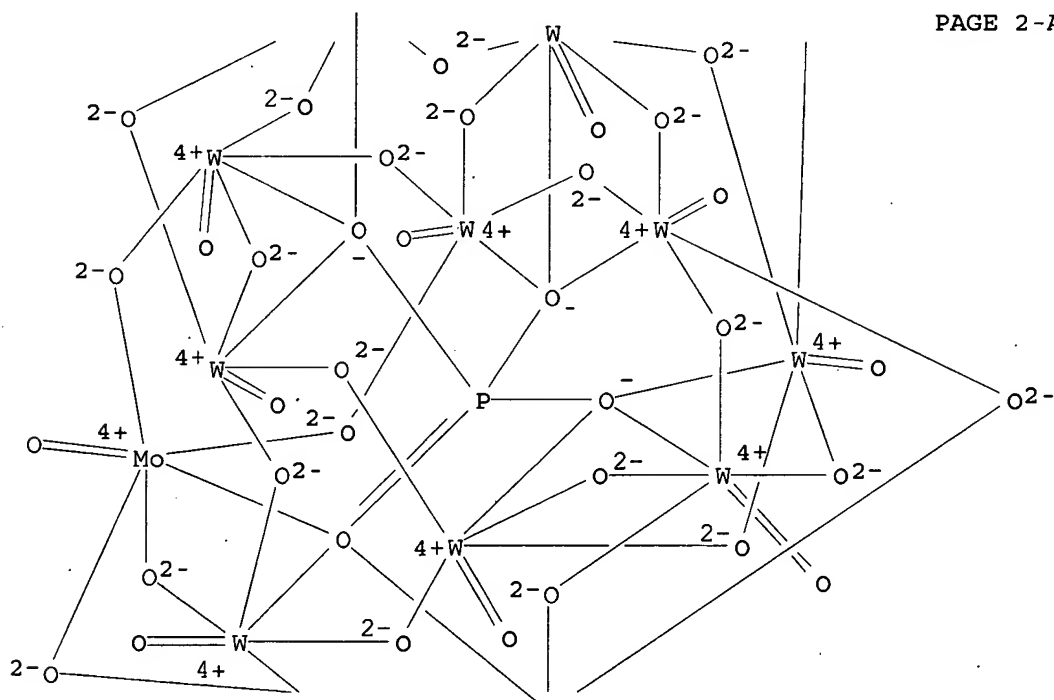


PAGE 3-A

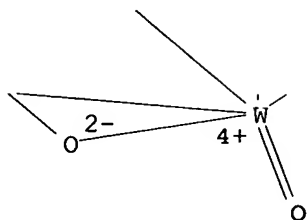
 $\bullet_3 \text{H}^+$ 

```
RN      63950-64-1   HCAPLUS
CN      Tungstate(3-), tetracosam-μ-oxoundeca-oxo(oxomolybdate) [μ12-
[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O''':κO''':κO''':κO''']undeca-
, trihydrogen(9CI)    (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A

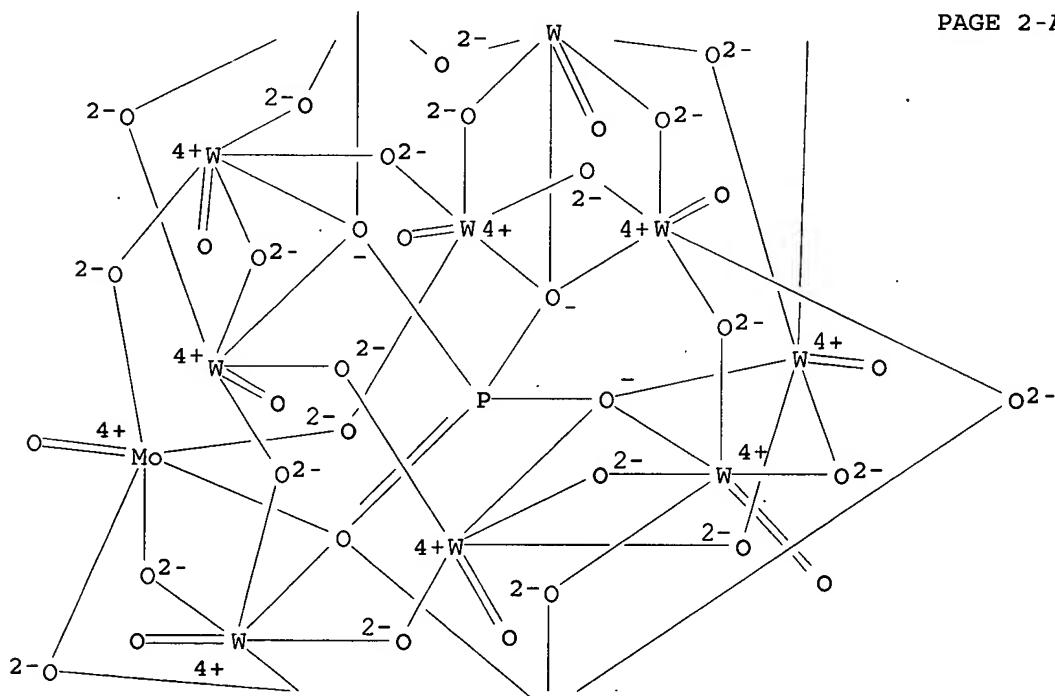


PAGE 3-A

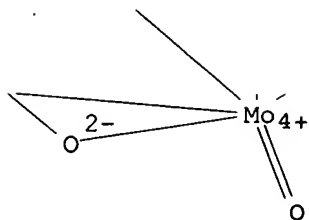
 $\bullet_3 \text{H}^+$ 

```
RN      69106-78-1  HCAPLUS
CN      Tungstate(3-), tricosam-μ-oxodecaoxo(μ-oxodioxodimolybdate) [μ12-
        [phosphato(3-)-κO:κO:κO:κO':κO':κO':.k
        appa.O':κO':κO':κO':κO':κO':]]deca-,
        trihydrogen (9CI) (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A

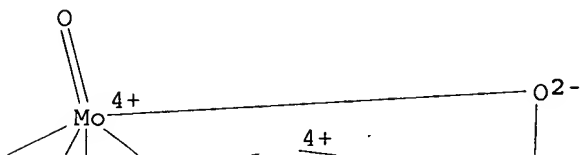


PAGE 3-A

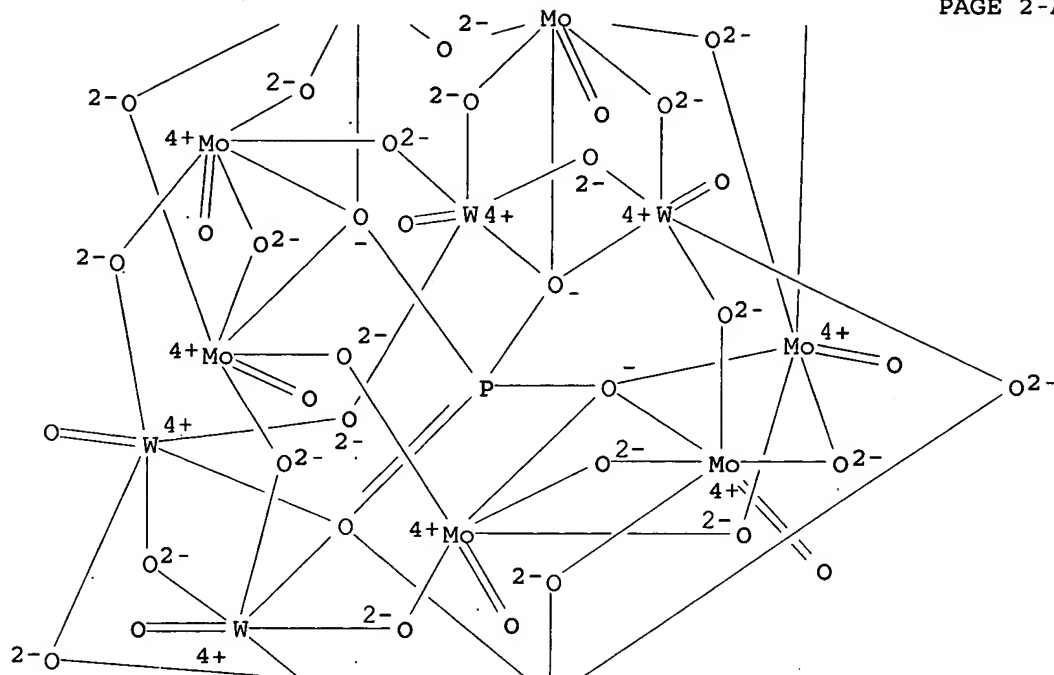
● 3 H<sup>+</sup>

RN	92627-46-8	HCAPLUS
CN	Tungstate(3-), (deca- $\mu$ -oxoheptaooxoheptamolybdate)tetradeca- $\mu$ -oxopentaoxo [ $\mu$ 12-[phosphato(3-)- $\kappa O:\kappa O:\kappa O:\kappa O'$ ::ka ppa.O': $\kappa O'$ : $\kappa O'$ : $\kappa O''$ : $\kappa O''$ : $\kappa O'''$ : $\kappa O'''$ : $\kappa O'''$ ]]penta-, trihydrogen (9CI) (CA INDEX NAME)	

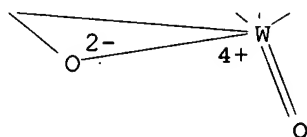
PAGE 1-A



PAGE 2-A



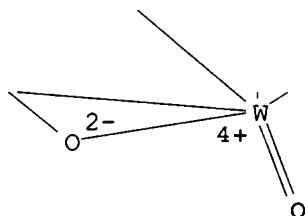
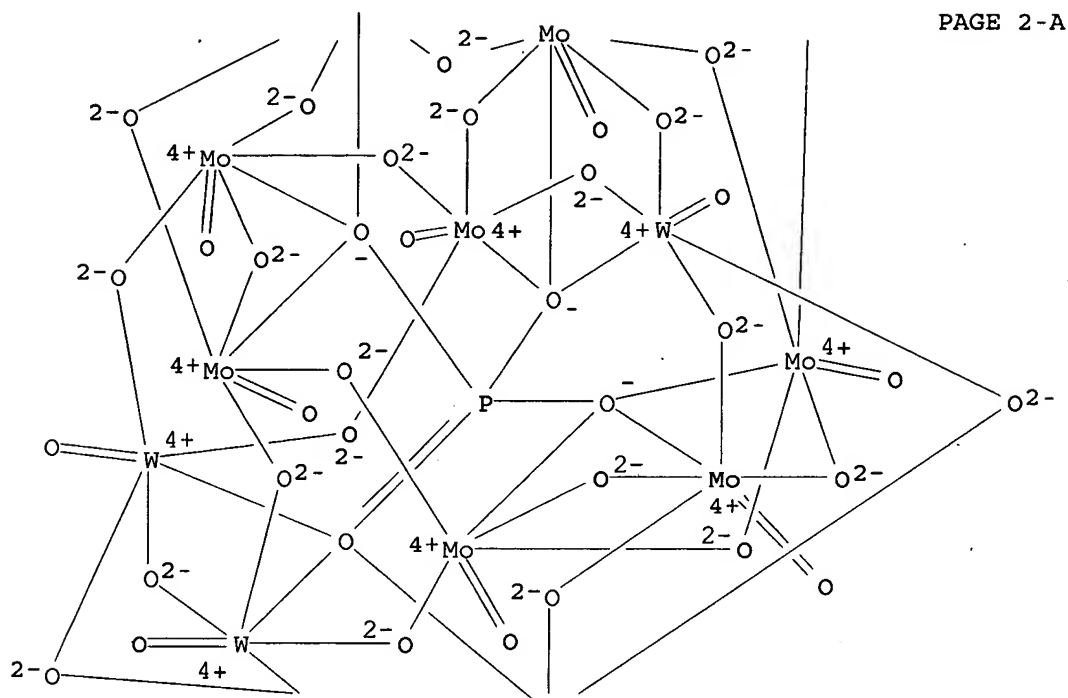
PAGE 3-A



●<sub>3</sub> H<sup>+</sup>

```
RN      92627-47-9   HCAPLUS
CN      Tungstate(3-), (dodeca-μ-oxooctaoxooctamolybdate) dodeca-μ-
        oxotetraoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.ka
        ppa.O':κO':κO':κO':κO':κO':κO':κO'']]tetra-, trihydrogen (9CI) (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

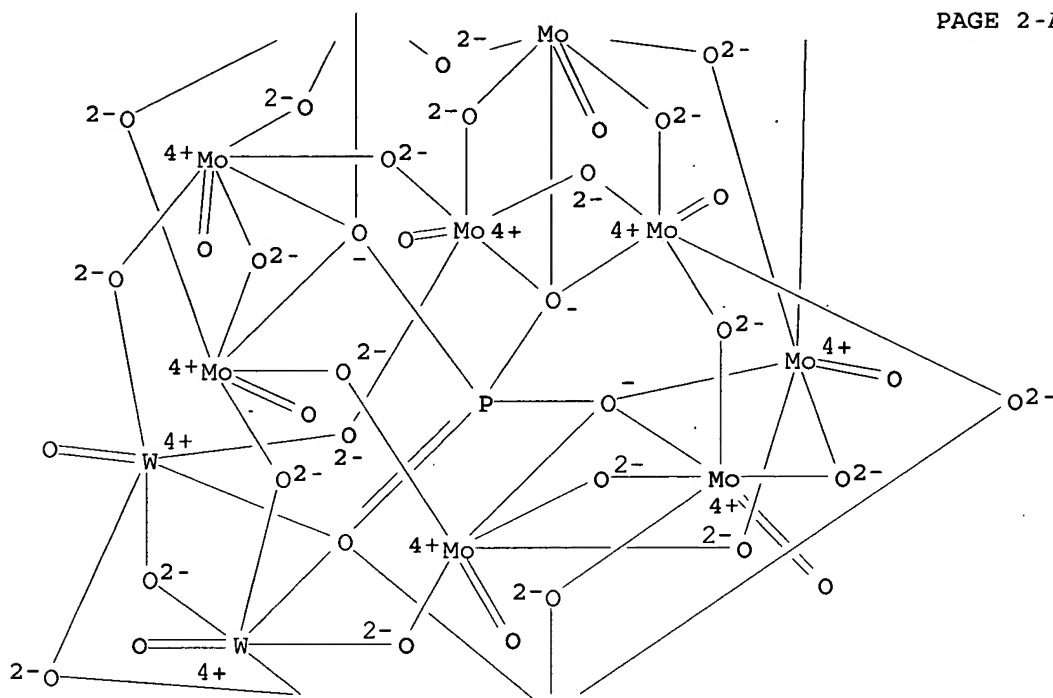


● 3 · H<sup>+</sup>

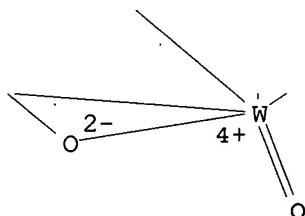
RN 92627-49-1 HCAPLUS  
 CN Tungstate(3-), nona-μ-oxotrioxo(pentadeca-μ-oxonona-oxononamolybdate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]tri-, trihydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



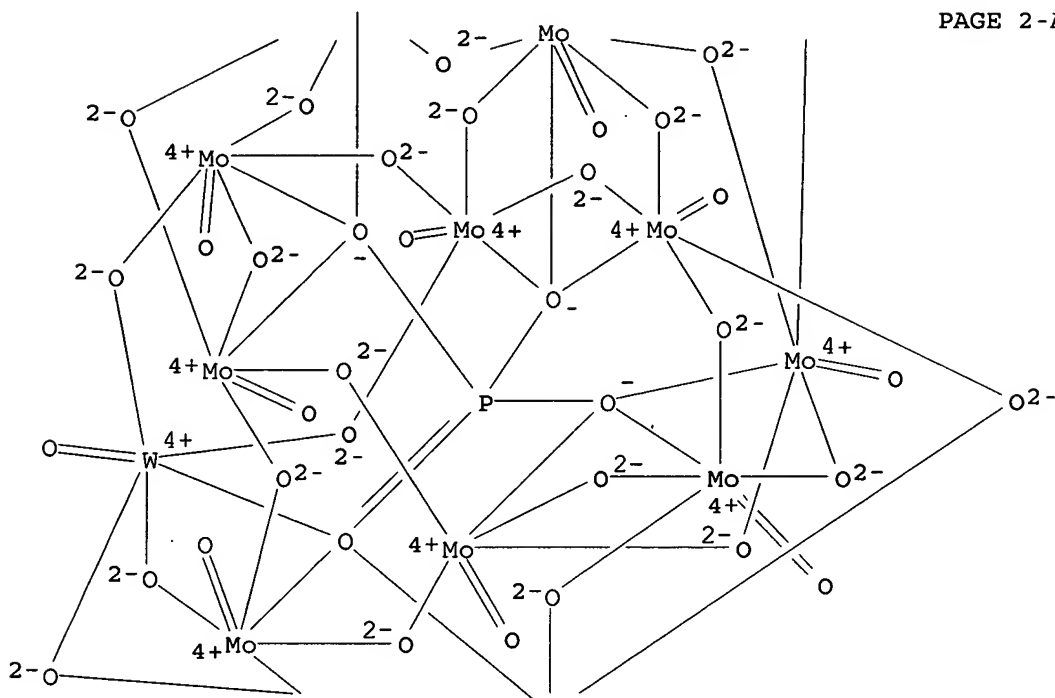
PAGE 3-A

● 3 H<sup>+</sup>

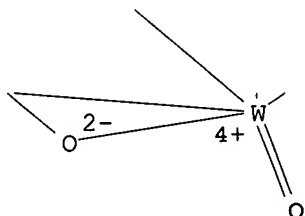
RN 92627-50-4 HCAPLUS  
 CN Tungstate(3-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO':κO':κO':κO':κO':κO':.ka.ppa.O''']]di-, trihydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



PAGE 3-A

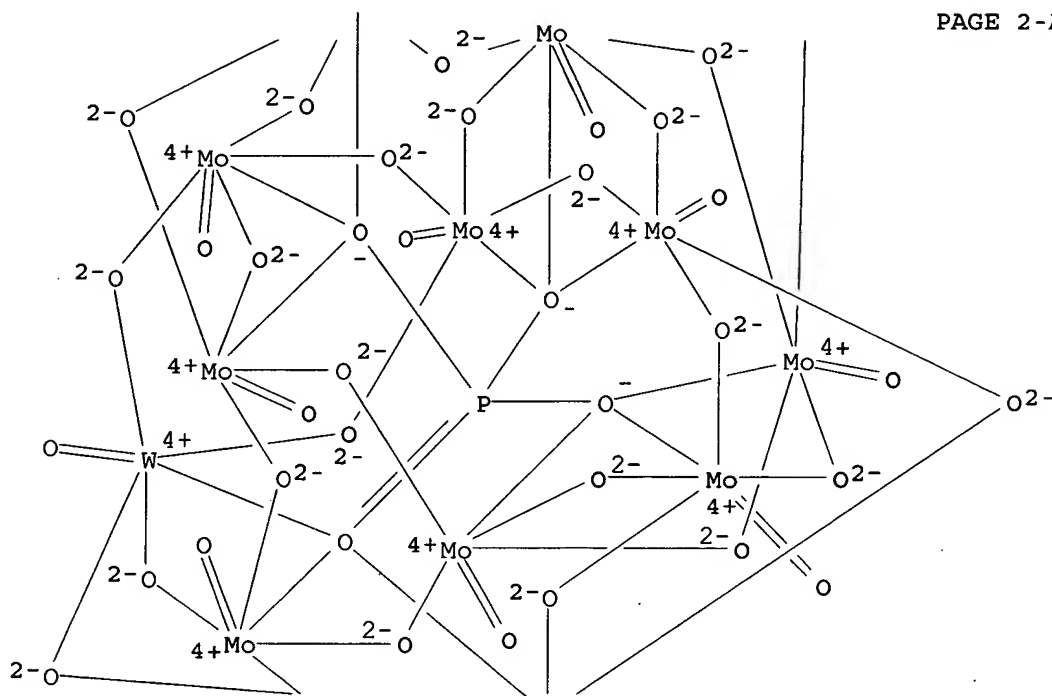


●<sub>3</sub> H<sup>+</sup>

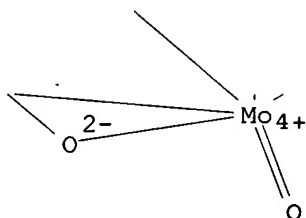
[illegible]

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



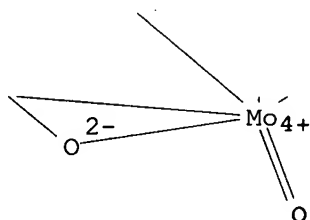
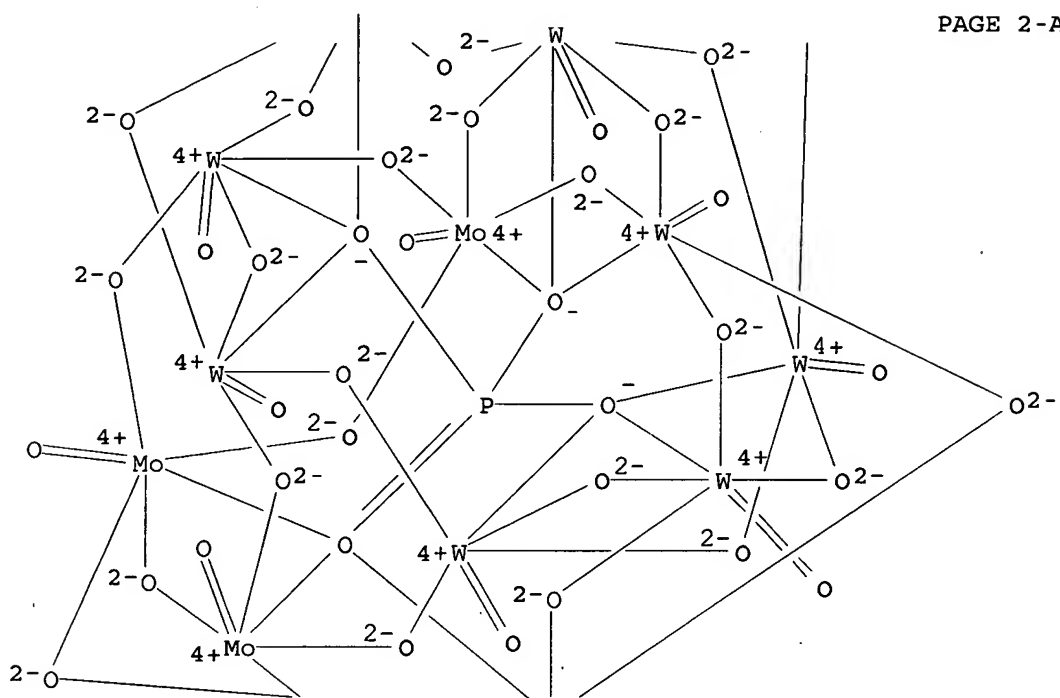
PAGE 3-A

● 3 H<sup>+</sup>

RN 93069-33-1 HCAPLUS  
 CN Tungstate(3-), eicosa-μ-oxooctaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO'']] (tetra-μ-  
 oxotetraoxotetramolybdate)octa-, trihydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

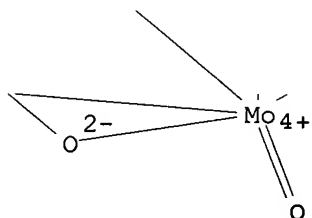
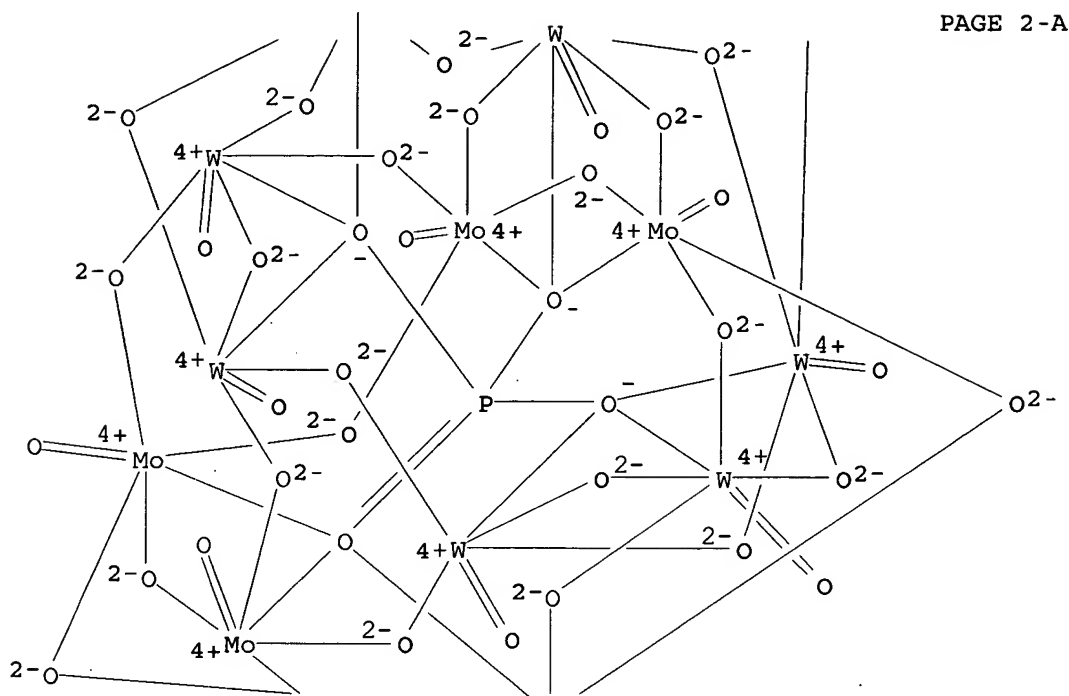




● 3 H<sup>+</sup>

RN 114760-21-3 HCAPLUS  
 CN Tungstate(3-), (hexa-μ-oxopentaoxopentamolybdate)octadeca-μ-  
 oxoheptaoxo [μ12- [phosphato(3-)-κO:κO:κO:κO':.ka  
 ppa.O':κO':κO':κO':κO':κO':κO':κO':  
 κO']]]hepta-, trihydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



● 3 H<sup>+</sup>

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 38 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:293984 HCAPLUS  
DN 135:62967  
TI Direct catalytic oxidation of ethylene to acetic acid. I. The  
composition of loaded Pd-heteropoly acid catalyst  
AU Yao, Jun-pin; Xu, Pei-ruo; Xu, Zheng-yong; Zhu, Zhi-hua  
CS Chemical Engineering College, ECUST, Shanghai, 200237, Peop. Rep. China  
SO Huadong Ligong Daxue Xuebao (2001), 27(1), 46-50, 93  
CODEN: HLIKEV; ISSN: 1006-3080  
PB Huadong Ligong Daxue Xuebao Bianjibu  
DT Journal  
LA Chinese

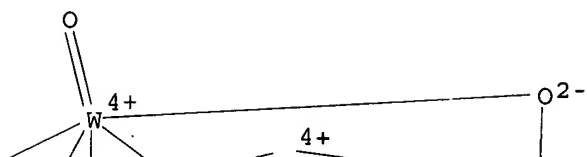
The effect of Pd-HSiW-Cr-Te/SiO<sub>2</sub> on direct oxidation of ethylene to acetic acid (I) was researched in a fixed-bed reactor, and the catalyst was investigated by XRD. The results showed that Pd-HSiW-Cr-Te/SiO<sub>2</sub> was an ideal catalyst for direct oxidation of C<sub>2</sub>H<sub>4</sub> to acetic acid. Pd and HSiW were the necessary active components and had excellent effect, the suitable contents of them were ωPd = 0.03 and ωHSiW = 0.60 (both based on carrier weight). In order to improve the catalytic performance of Pd-HSiW/SiO<sub>2</sub>, a series of promoters were studied. As a consequence, Te and Cr had excellent effect. By adding trace Te and Cr, the byproducts CO<sub>2</sub> and CH<sub>3</sub>CHO could be decreased greatly. The suitable contents of Te and Cr were Te:Pd= 1:20 and Cr:Pd= 1:30 (atom ratio). It was discovered by XRD that on the catalyst there was an active structure between Pd and HSiW, and the form of Te and Cr was in oxidative state: Te<sub>2</sub>O<sub>5</sub> and CrO<sub>2</sub>. When the reaction conditions were as follows: T = 190°, p = 0.80 MPa, SV = 4000 h<sup>-1</sup>, and the composition of reaction mixture gas was C<sub>2</sub>H<sub>4</sub>:O<sub>2</sub>:N<sub>2</sub>:H<sub>2</sub>O = 50:6:14:30 (mol ratio); the catalyst had ideal catalytic performance: the conversion of C<sub>2</sub>H<sub>4</sub> and the selectivity of I could reach 3.5% and 84.1% resp., and the byproducts CO<sub>2</sub> and CH<sub>3</sub>CHO were 12.4% and 1.1%. The once-through space time yield of acetic acid could reach 157.8 g/(L·h).

45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 67  
7440-05-3, Palladium, uses 7631-86-9, Silica, uses 12027-38-2,  
12-Tungstosilicic acid  
RL: CAT (Catalyst use); USES (Uses)  
(direct catalytic oxidation of ethylene to acetic acid with Pd-heteropoly acid catalyst containing, promoters)

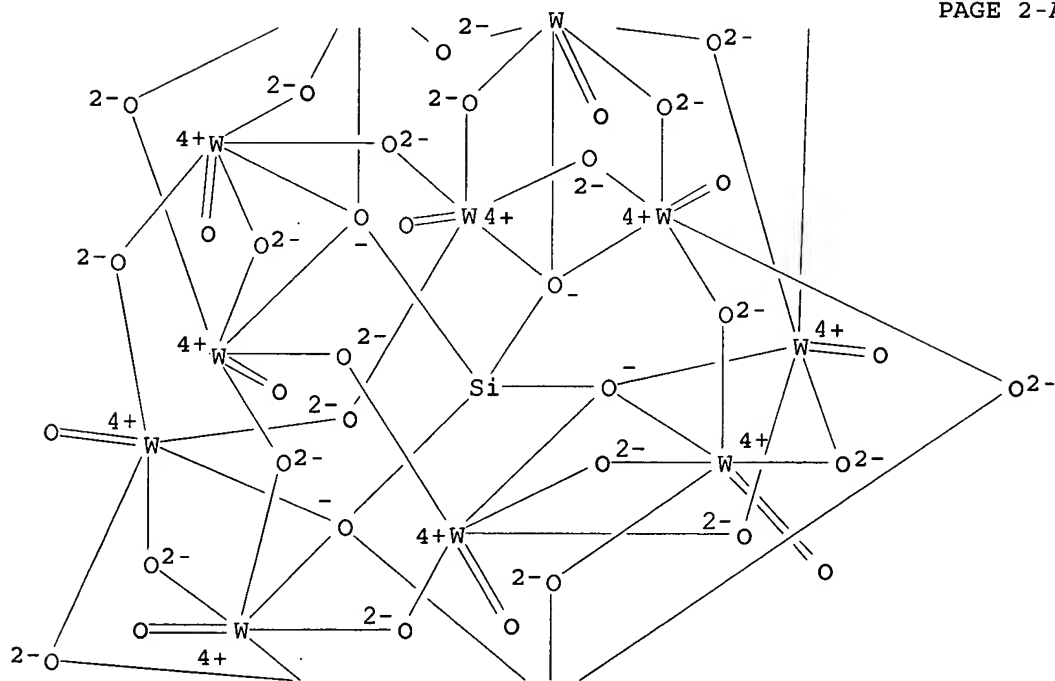
12027-38-2, 12-Tungstosilicic acid  
RL: CAT (Catalyst use); USES (Uses)  
(direct catalytic oxidation of ethylene to acetic acid with Pd-heteropoly acid catalyst containing, promoters)

12027-38-2 HCAPLUS  
Tungstate(4-), [μ<sub>12</sub>-[orthosilicato(4-)-κO:κO:κO:.kapp  
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap  
pa.O'':κO'']]tetracosam-oxododecaoxododeca-, tetrahydrogen  
(9CI) (CA INDEX NAME)

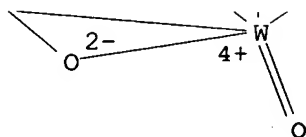
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

L32 ANSWER 39 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:265311 HCAPLUS

DN 134:282477

TI Palladium-containing catalyst systems for preparation of acetic acid by gas-phase oxidation of ethylene

IN Obana, Yoshiaki; Abe, Kenichi; Oguchi, Wataru; Yamada, Kenji; Uchida, Hiroshi

PA Showa Denko K. K., Japan

SO PCT Int. Appl., 63 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001024924	A1	20010412	WO 2000-JP6923	20001004 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 2000075564	A5	20010510	AU 2000-75564	20001004 <--
	EP 1226868	A1	20020731	EP 2000-964663	20001004 <--
	EP 1226868	B1	20051228		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	TW 539576	B	20030701	TW 2000-89120676	20001004 <--
	US 6706919	B1	20040316	US 2000-674920	20001108 <--
PRAI	JP 1999-284522	A	19991005	<--	
	US 1999-164153P	P	19991108	<--	
	JP 2000-151130	A	20000523	<--	
	WO 2000-JP6923	W	20001004	<--	

AB The catalyst systems for preparation of acetic acid by gas-phase oxidation of ethylene comprise catalyst comps., which are supported by supports, containing (a) palladium, (b) heteropoly acids and/or their salts, (c) vanadium and/or molybdenum, and optionally (d)  $\geq 1$  Group 14, 15, and 16 elements on Periodic Table and/or (e) Group 7, 8, 9, 10, 11 and 12 elements. Thus, gas mixture of 10/6/15/69 ethylene/oxygen/water/nitrogen was introduced into a reactor filled with silica-supported catalyst containing palladium 1.5, tungstosilicic acid 22 and vanadium 0.025% at 200° and 0.8 MPa to give acetic acid with selectivity 69.0%.

IC ICM B01J023-64

ICS B01J023-68; B01J027-057; B01J027-199; C07C051-21; C07C053-08;  
C07C061-00

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 67

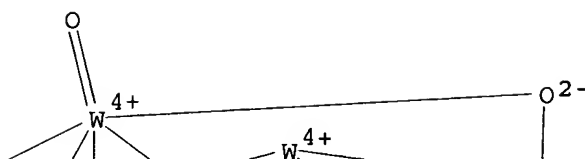
IT 1343-93-7, 12-Tungstophosphoric acid 7439-92-1, Lead, uses  
7439-98-7, Molybdenum, uses 7440-50-8, Copper, uses 7440-57-5, Gold,  
uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-69-9,  
Bismuth, uses 7646-85-7, Zinc chloride, uses 7782-49-2, Selenium, uses  
7787-60-2, Bismuth chloride 7803-55-6, Ammonium metavanadate  
7803-68-1, Telluric acid (H<sub>6</sub>TeO<sub>6</sub>) 10026-22-9, Cobalt **nitrate**  
hexahydrate 10060-12-5, Chromium chloride hexahydrate 10102-20-2,  
Telluric acid (H<sub>2</sub>TeO<sub>3</sub>), disodium salt 10377-66-9, Manganese  
**nitrate** 12027-38-2 12027-67-7, Ammonium molybdate  
12293-15-1 12293-24-2, Molybdovanadophosphoric acid  
(H<sub>6</sub>PV<sub>3</sub>Mo<sub>9</sub>O<sub>40</sub>) 13494-80-9, Tellurium, uses 16903-35-8, Chloroauric acid  
37280-68-5, Molybdovanadophosphoric acid 55128-39-7,  
Tungstovanadophosphoric acid 75977-42-3, Molybdophosphoric acid  
(H<sub>4</sub>PMo<sub>12</sub>O<sub>40</sub>) 120310-77-2, Tungstovanadosilicate (SiVW<sub>11</sub>O<sub>405</sub>-)  
RL: **CAT (Catalyst use)**; **USES (Uses)**  
(supported catalysts containing palladium, **heteropoly** acids  
vanadium and/or molybdenum for preparation of acetic acid by gas-phase  
oxidation of ethylene)

IT 1343-93-7, 12-Tungstophosphoric acid 12027-38-2  
12293-15-1 12293-24-2, Molybdovanadophosphoric acid  
(H<sub>6</sub>PV<sub>3</sub>Mo<sub>9</sub>O<sub>40</sub>) 75977-42-3, Molybdophosphoric acid (H<sub>4</sub>PMo<sub>12</sub>O<sub>40</sub>)  
RL: **CAT (Catalyst use)**; **USES (Uses)**  
(supported catalysts containing palladium, **heteropoly** acids  
vanadium and/or molybdenum for preparation of acetic acid by gas-phase  
oxidation of ethylene)

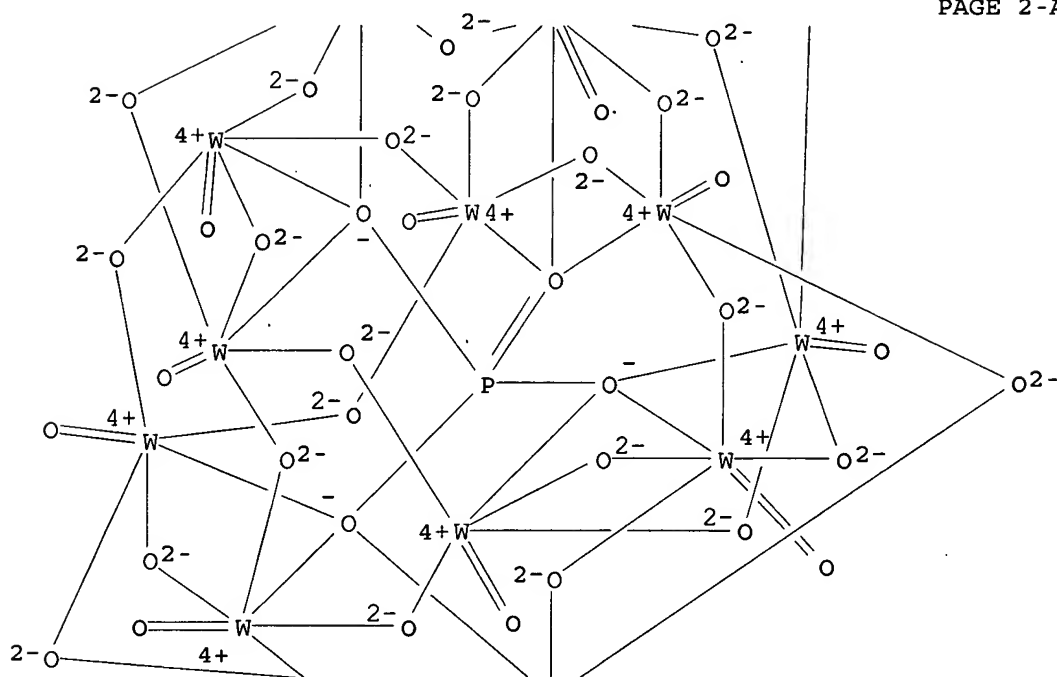
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':.kappa  
.O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

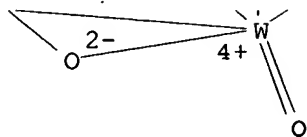
PAGE 1-A



PAGE 2-A



PAGE 3-A



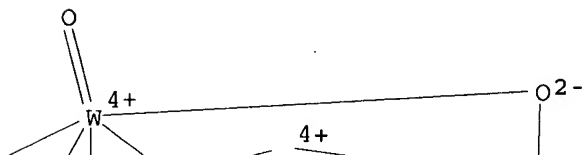
● 3 H<sup>+</sup>

```

RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:..kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'']]tetracosα-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

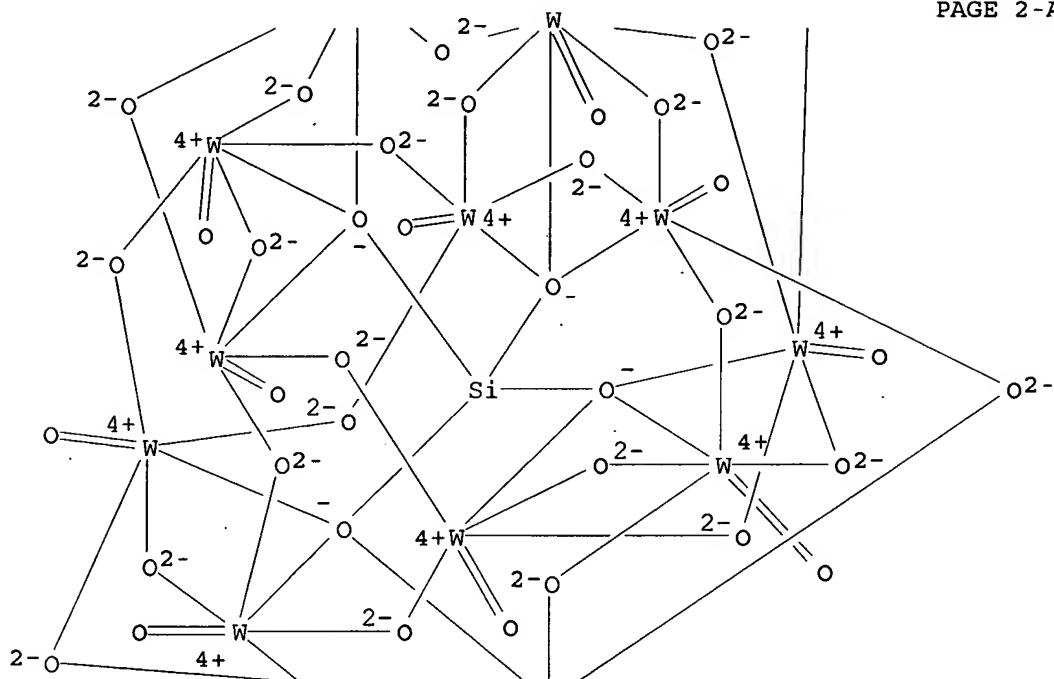
```

PAGE 1-A

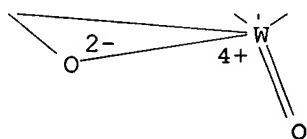




PAGE 2-A



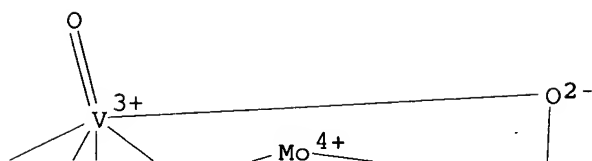
PAGE 3 - A



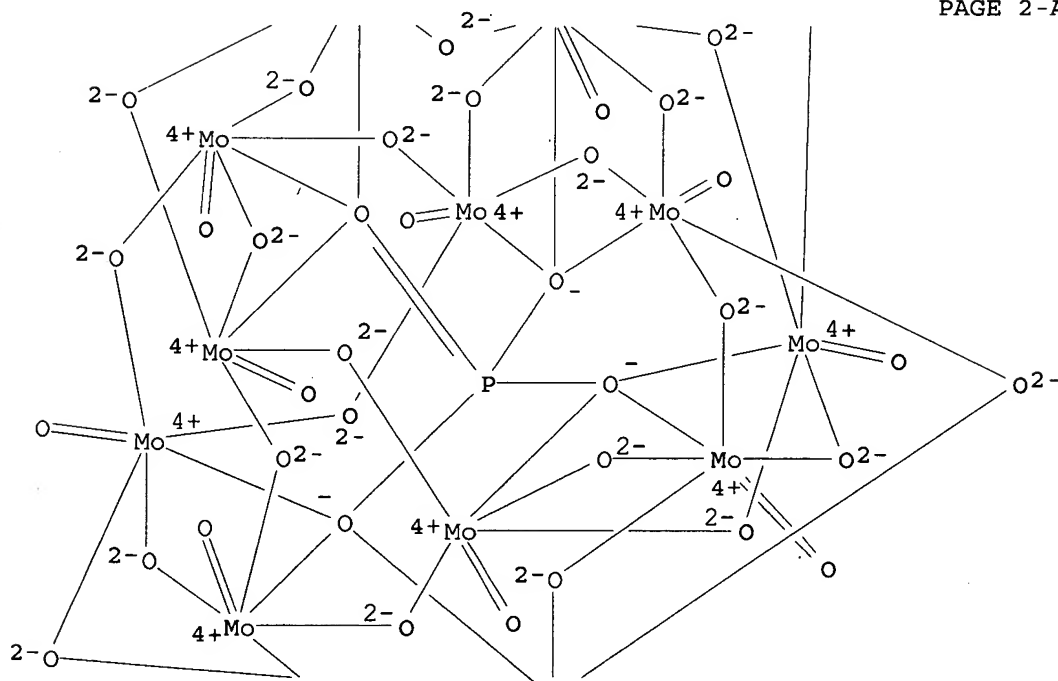
●<sub>4</sub> H<sup>+</sup>

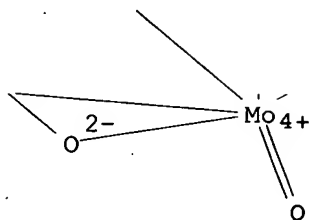
```
RN      12293-15-1   HCAPLUS
CN      Vanadate(4-), (eicosa-μ-oxoundecaοxoundecamolybdate)tetra-μ-
        oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO':κO'':κO'':κO'':κO'':κO'':κO'':κapp
        a.O''']]-, tetrahydrogen (9CI)    (CA INDEX NAME)
```

PAGE 1-A



PAGE 2-A





PAGE 3-A

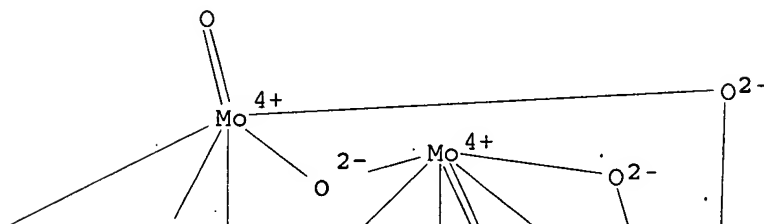
●<sub>4</sub> H<sup>+</sup>

```

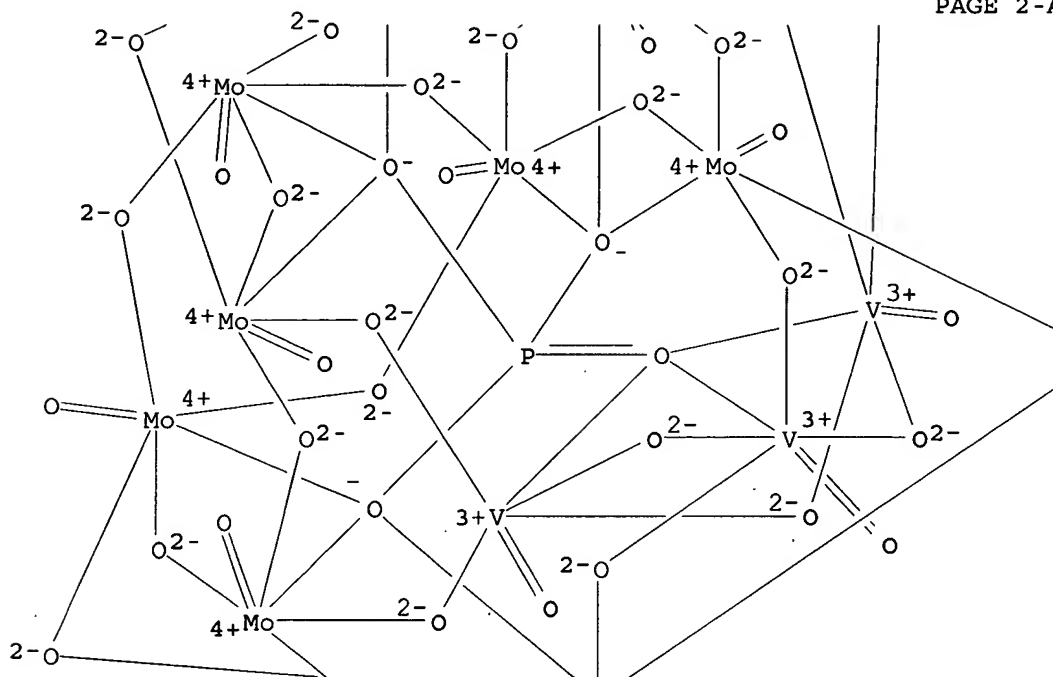
RN      12293-24-2   HCAPLUS
CN      Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-
        oxononaaxononamolybdate) [μ12-[phosphato(3-)-
        κO:κO:κO:κO':κO':κO':κO'':.kappa
        .O'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen
        (9CI)      (CA INDEX NAME)

```

PAGE 1-A



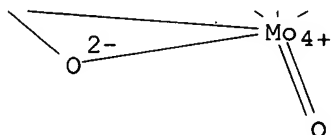
PAGE 2-A



PAGE 2-B



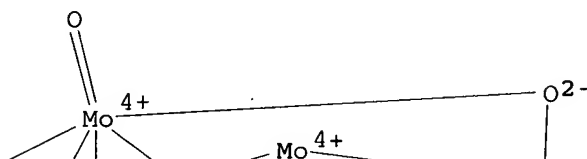
PAGE 3-A

● 6 H<sup>+</sup>

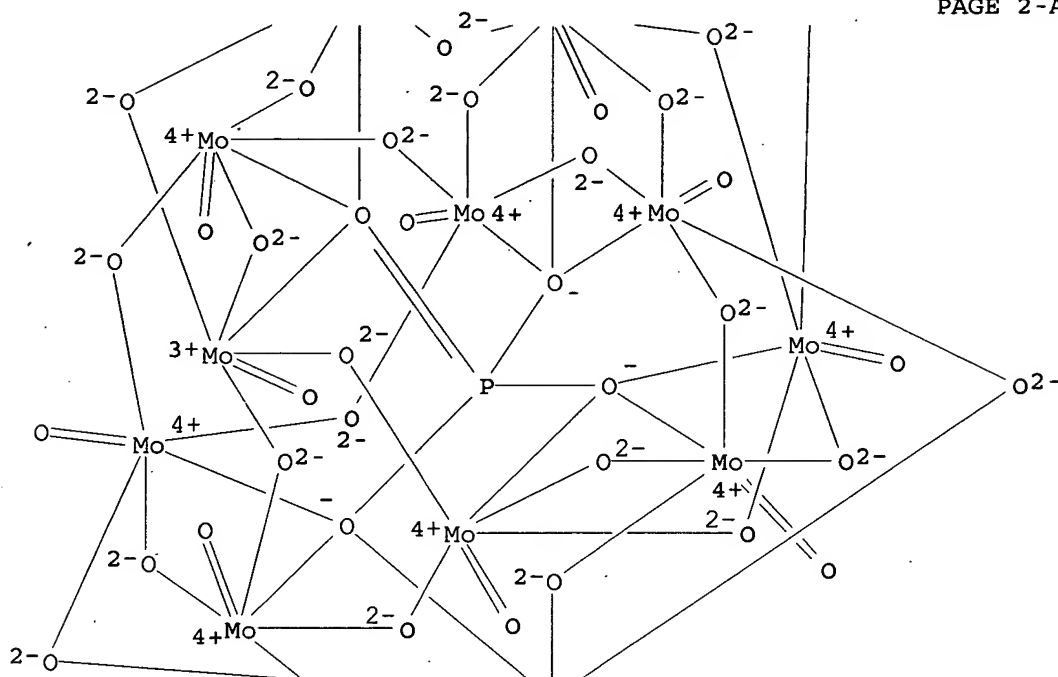
RN 75977-42-3 HCAPLUS

CN Molybdate(4-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':.kappa  
.O':κO':κO':κO':κO':κO'']]dodeca-,  
tetrahydrogen (9CI) (CA INDEX NAME)

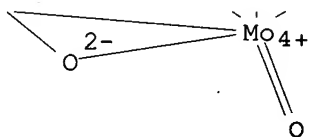
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 40 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:204694 HCAPLUS  
DN 135:97898  
TI Acidity of solutions of heteropoly acids with various structures and  
compositions  
AU Timofeeva, M. N.; Maksimov, G. M.; Likholobov, V. A.  
CS Boreskov Institute of Catalysis, Siberian Division, Russian Academy of  
Sciences, Novosibirsk, 630090, Russia  
SO Kinetics and Catalysis (Translation of Kinetika i Kataliz) (2001  
, 42(1), 30-34  
CODEN: KICAA8; ISSN: 0023-1584  
PB MAIK Nauka/Interperiodica Publishing  
DT Journal  
LA English

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

AB Hammett acidity functions  $H_0$  of solns. of heteropoly acids  $H_5PW_{11}XO_4$  ( $X(IV) = Ti, Zr$ ),  $H_3PW_{12}O_{40}$ ,  $H_4SiW_{12}O_{40}$ ,  $H_6P_2W_{21}O_{71}$ , and  $H_{21}B_3W_3O_{132}$ , as well as  $HClO_4$  and  $CF_3SO_3H$ , in water and 90% aqueous acetone and acetonitrile, are measured at 20°C by the indicator method. In aqueous solns. all acids under study have the same strength, and in organic solvents their acidities differ. A correlation between the catalytic activity and acidity of the solution is found for the condensation of acetone to mesityl oxide.

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
Section cross-reference(s): 23

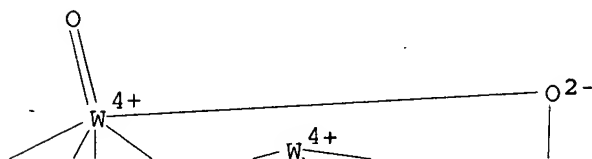
IT 1343-93-7 12027-38-2 104484-97-1  
132826-36-9, Tungsten hydroxide oxide phosphate ( $W_{21}(OH)_6O_{57}(PO_4)_2$ )  
146066-47-9 243445-97-8  
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)  
(acidity of solns. of heteropoly acids with various structures and compns.)

IT 1343-93-7 12027-38-2 104484-97-1  
146066-47-9  
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)  
(acidity of solns. of heteropoly acids with various structures and compns.)

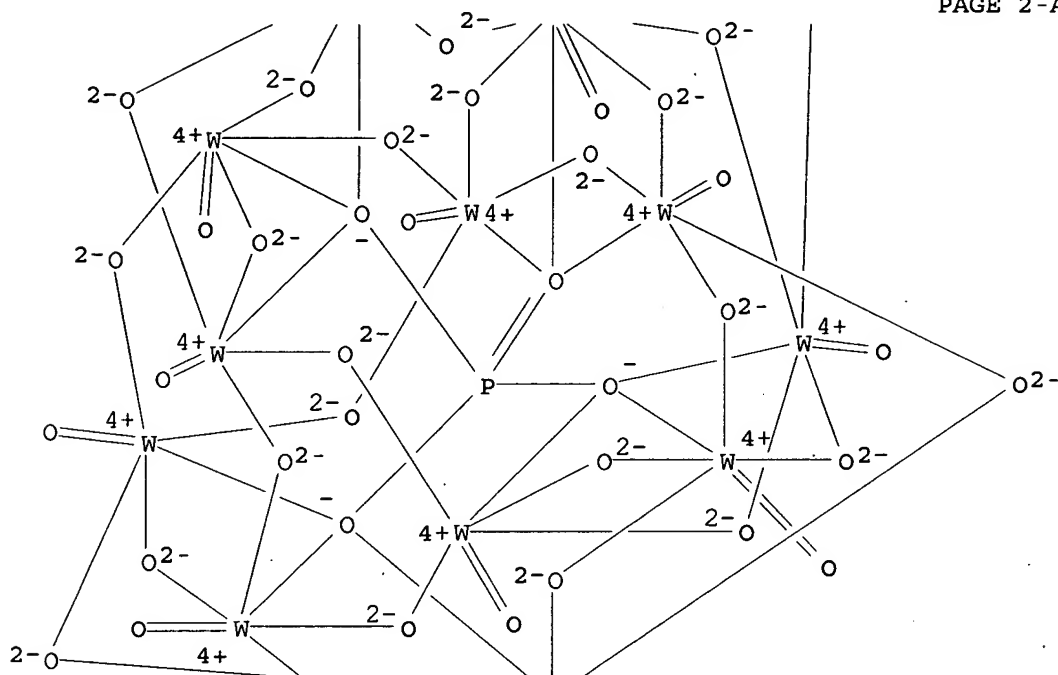
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-oxododecaoxo[ $\mu_{12}$ -[phosphato(3-)-  
 $\kappa O:\kappa O:\kappa O:\kappa O':\kappa O':\kappa O':\kappa O''::\kappaappa$   
 $.O'':\kappa O'':\kappa O''':\kappa O''':\kappa O''':\kappa O''']$ ]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

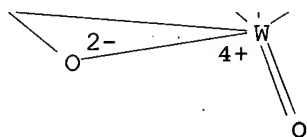
PAGE 1-A



PAGE 2-A



PAGE 3-A

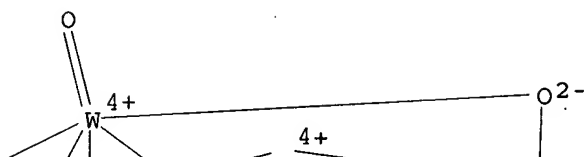


● 3 H<sup>+</sup>

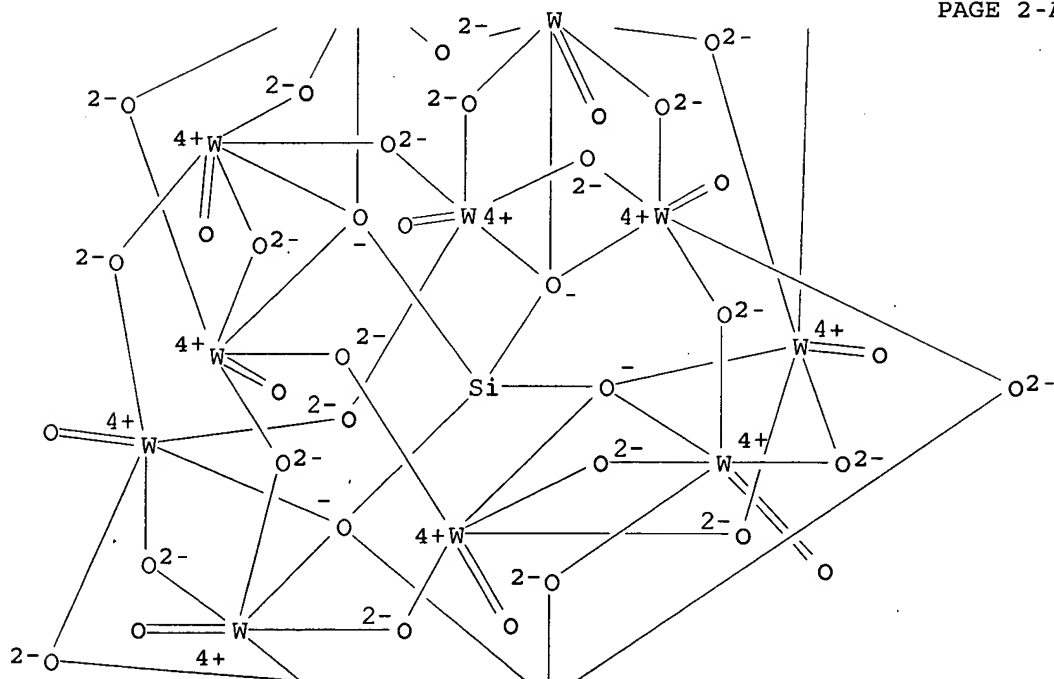
```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [mu12-[orthosilicato(4-)-kappa:kappa:kappa:.kappa
a.O':kappa':kappa':kappa'':kappa'':kappa'':kappa'':.kappa
pa.O''':kappa'']]tetracosamucron-oxododecaoxododecam-, tetrahydrogen
(9CI)    (CA INDEX NAME)
```



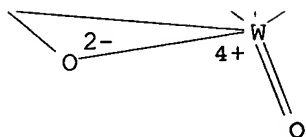
PAGE 1-A



PAGE 2-A



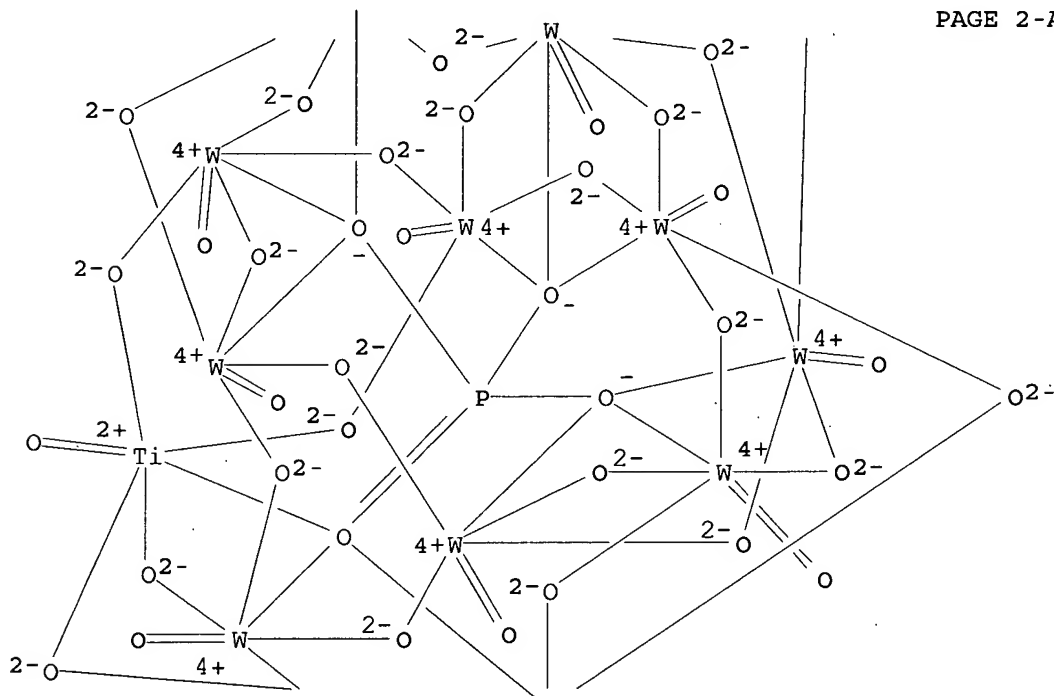
PAGE 3 -A

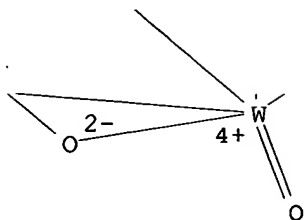
 $\bullet_4 \text{H}^+$ 

```
RN      104484-97-1   HCAPLUS
CN      Titanate(5-), (eicosa-μ-oxoundecaοxoundecatungstate) tetra-μ-
        oxooxo [μ12- [phosphato (3-) -κO:κO:κO:κO':κO
        ':κO':κO'':κO''':κO''':κO''':κO''':κapp
        a.O''']]-, pentahydrogen (9CI)    (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



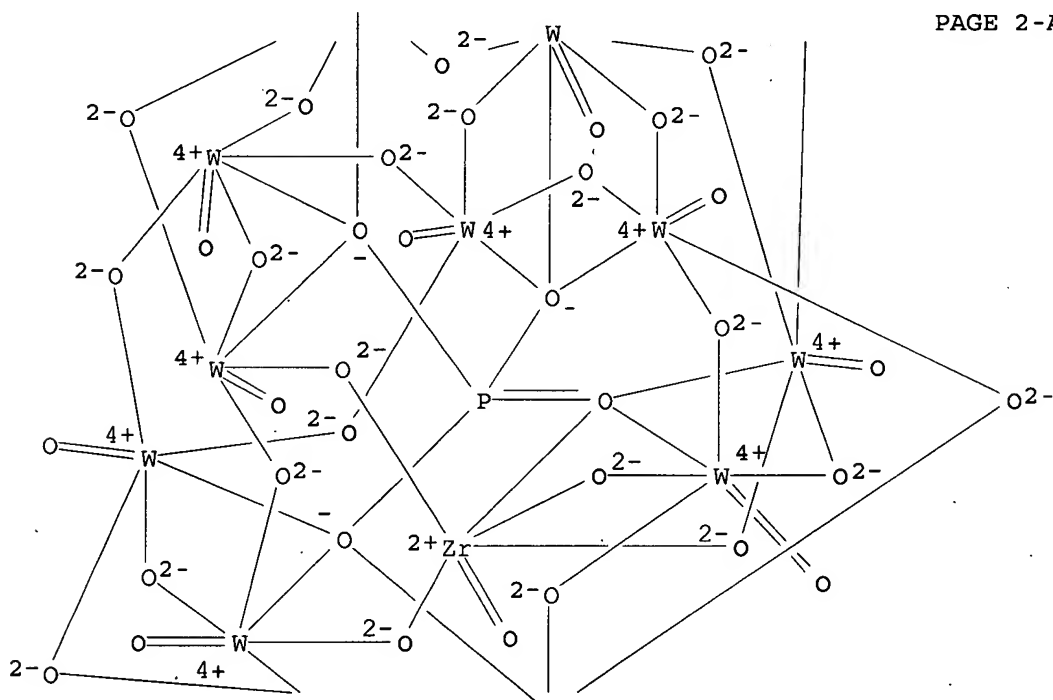


PAGE 3-A

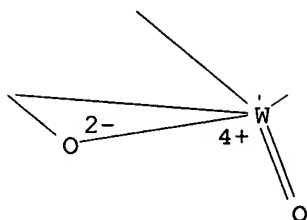
● 5 H<sup>+</sup>

```
RN      146066-47-9   HCAPLUS
CN      Zirconate(5-), (eicosa-μ-oxoundeca-oxundecatungstate) tetra-μ-
        oxooxo [μ12- [phosphato(3-) -κO:κO:κO:κO':κO
        ':κO':κO':κO':κO':κO':κO':κO'::kapp
        a.O''']] -, pentahydrogen (9CI)  (CA INDEX NAME)
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



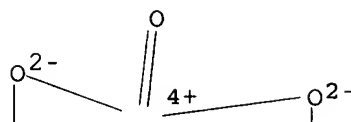
PAGE 3-A

●5 H<sup>+</sup>

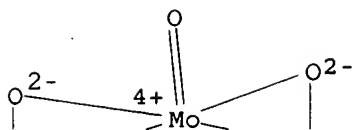
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 41 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2001:108943 HCAPLUS  
DN 135:61108  
TI Selective oxidation of ethylbenzene to acetophenone catalyzed by lanthanum molybdovanadophosphate heteropoly complex  
AU Yu, Yaqin; Li, Xiaojing; Lin, Shen  
CS Department of Chemistry, Fujian Normal University, Fuzhou, 350007, Peop. Rep. China  
SO Huaxue Yanjiu Yu Yingyong (2000), 12(6); 654-657  
CODEN: HYYIFM; ISSN: 1004-1656  
PB Huaxue Yanjiu Yu Yingyong Bianjibu  
DT Journal  
LA Chinese  
OS CASREACT 135:61108  
AB The lanthanum molybdovanadophosphoric quaternary heteropoly complex was synthesized by copptn., and its structure was identified as (NH<sub>4</sub>)<sub>15</sub>[La(PMo<sub>9</sub>V<sub>2</sub>O<sub>39</sub>)<sub>2</sub>] · 6H<sub>2</sub>O. The catalytic effect of the complex for selective oxidation of ethylbenzene to acetophenone was studied. The suitable conditions for the oxidation reaction was presented.  
CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
IT 10099-59-9, Lanthanum **nitrate** 12293-21-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(for preparation of lanthanum molybdovanadophosphate heteropoly complex)  
IT 345958-71-6  
RL: **CAT (Catalyst use)**; USES (Uses)  
(selective oxidation of ethylbenzene to acetophenone catalyzed by lanthanum molybdovanadophosphate heteropoly complex)  
IT 345958-71-6  
RL: **CAT (Catalyst use)**; USES (Uses)  
(selective oxidation of ethylbenzene to acetophenone catalyzed by lanthanum molybdovanadophosphate heteropoly complex)  
RN 345958-71-6 HCAPLUS  
CN Lanthanate (15-), hexadeca-μ-oxobis(μ-oxodioxodivanadate)bis(pentadeca-μ-oxononaononamolybdate)bis[μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'']]-, pentadecaammonium (9CI) (CA INDEX NAME)

PAGE 1-B



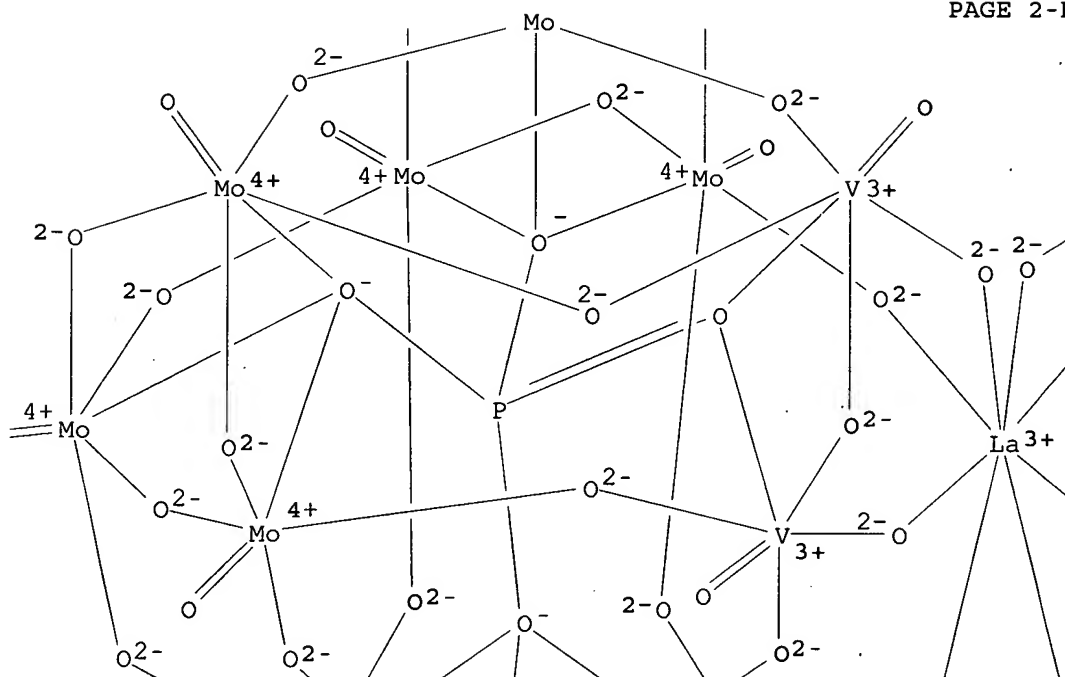
PAGE 1-C



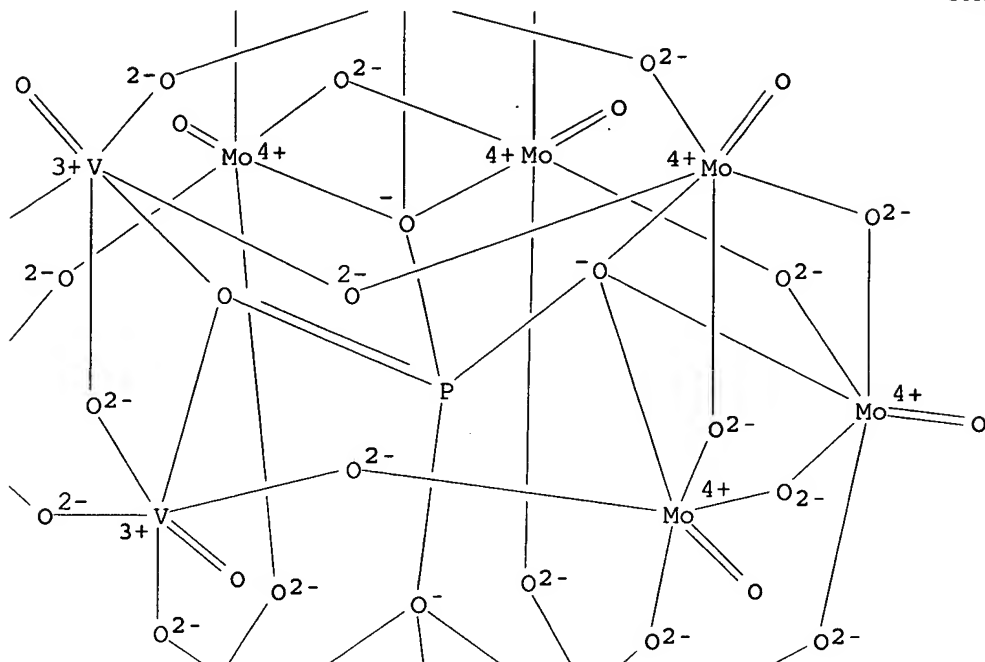
PAGE 2-A

O=

PAGE 2-B

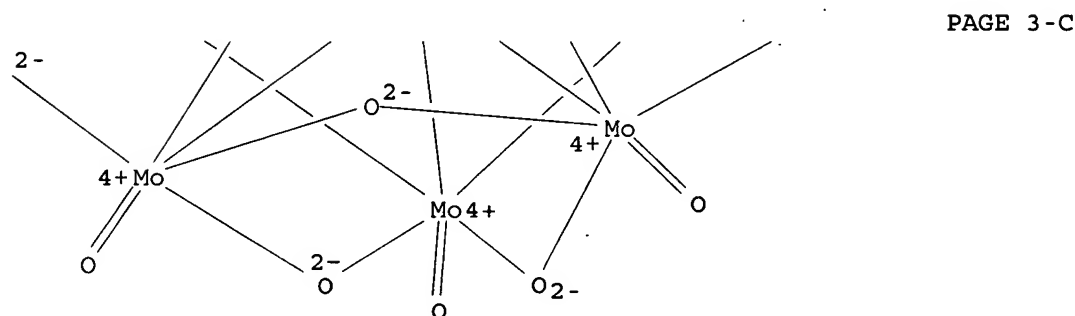
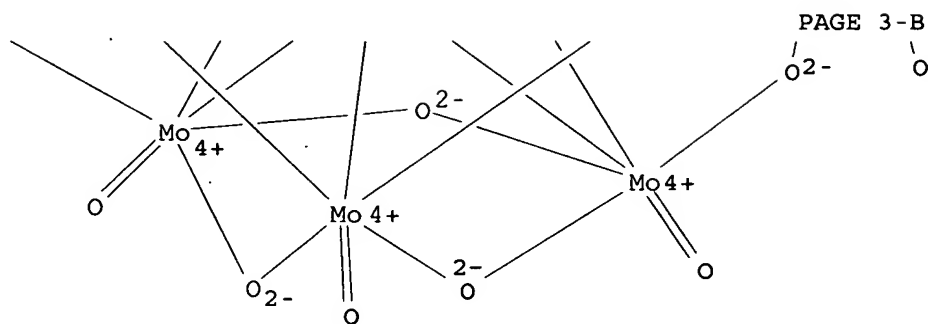


PAGE 2-C



PAGE 3-A

●15  $\text{NH}_4^+$



L32 ANSWER 42 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:30612 HCAPLUS

DN 134:207455

TI Coupling of phenol with ketones in the presence of heteropoly acids with different structures and **compositions**

AU Timofeeva, M. N.; Maksimov, G. M.; Utkin, V. A.; Likholobov, V. A.

CS Boreskov Institute of Catalysis, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630090, Russia

SO Kinetics and Catalysis (Translation of Kinetika i Kataliz) (2000), 41(6), 767-770

CODEN: KICAA8; ISSN: 0023-1584

PB MAIK Nauka/Interperiodica Publishing

DT Journal

LA English

OS CASREACT 134:207455

AB The reactions of phenol coupling with ketones MeCOR (R = CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, C<sub>3</sub>H<sub>7</sub>, and t-butyl) are studied in the presence of heteropoly acids with different structures and compns. in toluene solns. ([PhOH]/[MeCOR] = (2-8)/1 mol/mol; 50-70°) with thioglycolic acid added as a promoter. The reaction rate depends on ketone and heteropoly acid, and the yield of bisphenols is as high as 24-72%. The reaction orders are 0.68, 0.77, and 0.97 with respect to H<sub>6</sub>P<sub>2</sub>W<sub>2</sub>1071, H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>, and H<sub>4</sub>SiW<sub>12</sub>O<sub>40</sub>, resp., and the activation energies are 25.1, 21.0, and 20.6 kcal/mol, resp. Heteropoly acids of the Dawson structure exhibited the highest activity.

CC 22-4 (Physical Organic Chemistry)

Section cross-reference(s): 78

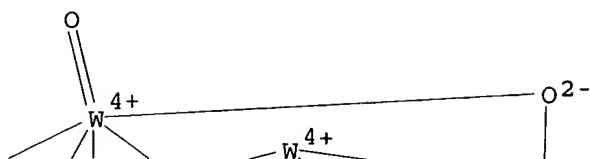
IT 12207-90-8 12411-74-4, Tungstophosphoric acid (H<sub>6</sub>P<sub>2</sub>W<sub>18</sub>O<sub>62</sub>)

RL: CAT (Catalyst use); USES (Uses)

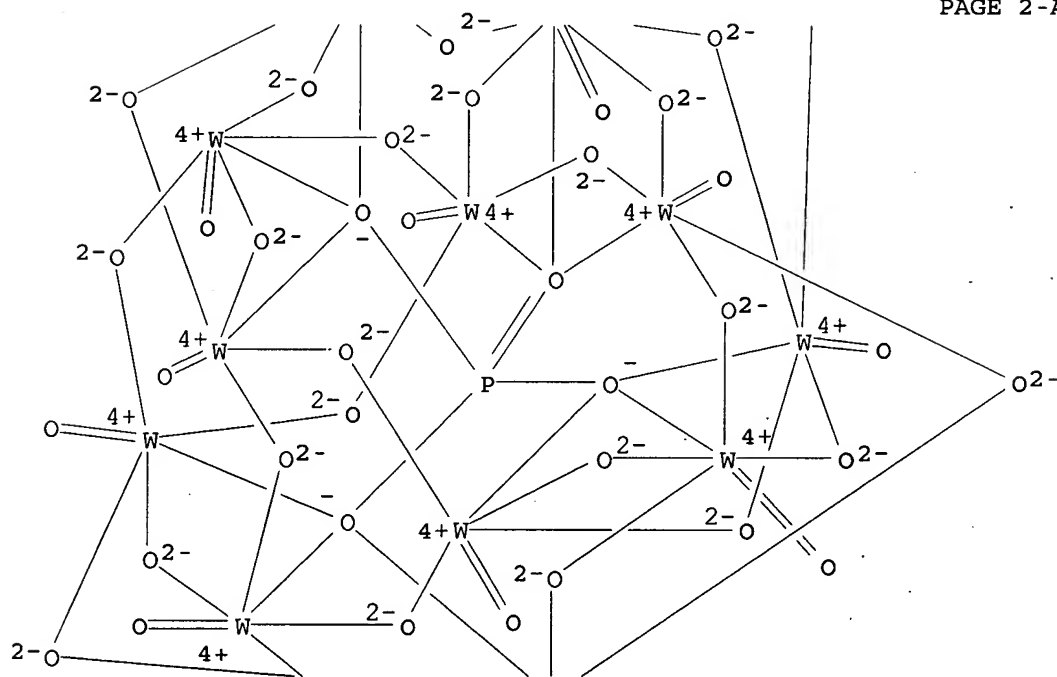




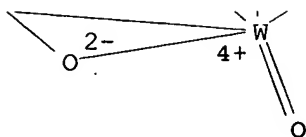
PAGE 1-A



PAGE 2-A

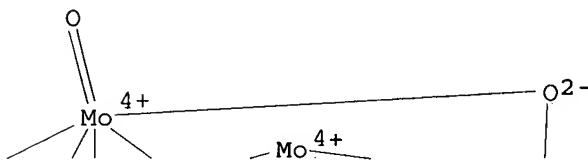


PAGE 3-A

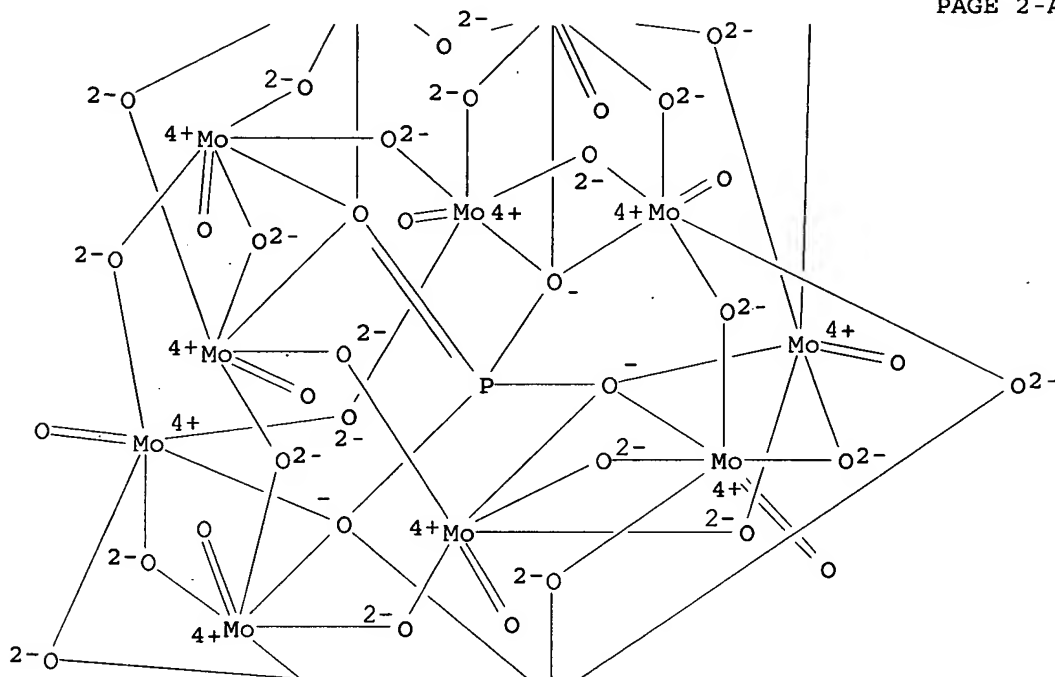
●3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdoxido[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

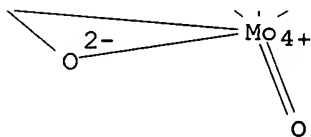
PAGE 1-A



PAGE 2-A



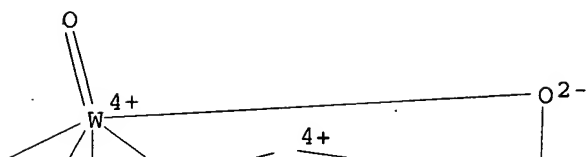
PAGE 3-A



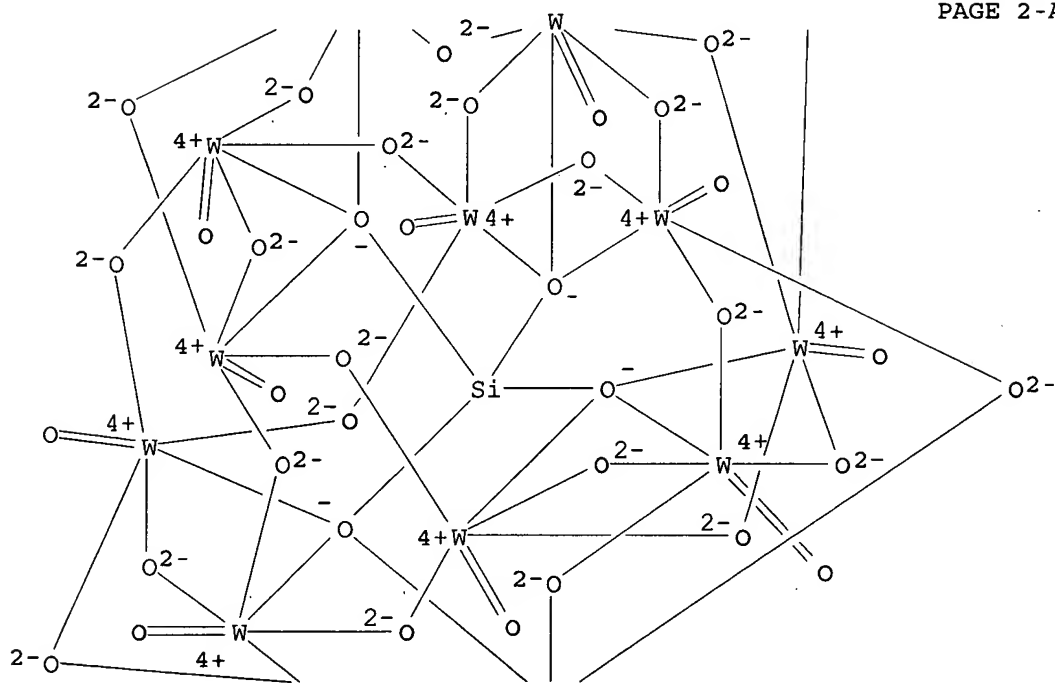
●<sub>3</sub> H<sup>+</sup>

```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O'':κO'']]tetracosα-μ-oxododecaoxododecα-, tetrahydrogen
(9CI)    (CA INDEX NAME)
```

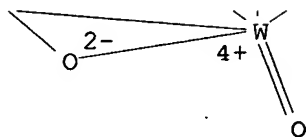
PAGE 1-A



PAGE 2-A

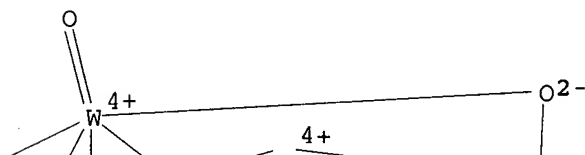


PAGE 3-A

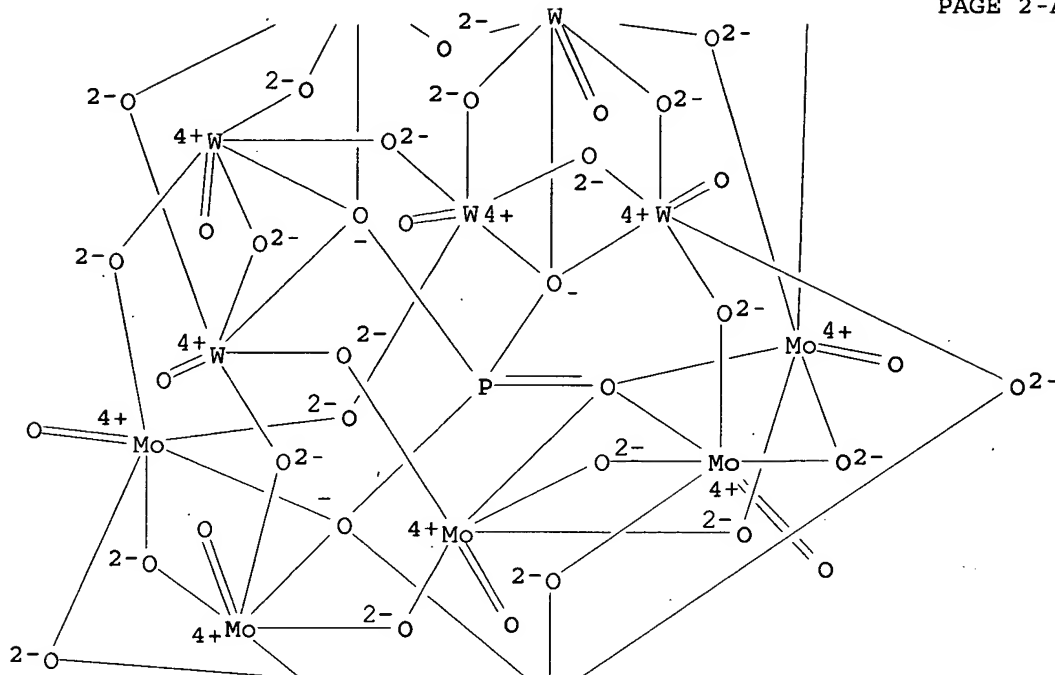
 $\bullet_4 \text{H}^+$ 

```
RN      12411-60-8    HCAPLUS  
CN      Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-  
        oxohexaoxo[μ12-[phosphato(3-) -κO:κO:κO:κO':.kap  
        pa.O':κO':κO'':κO'':κO'':κO'':κO'':κO'':.  
        kappa.O''']]hexa-, trihydrogen (9CI)   (CA INDEX NAME)
```

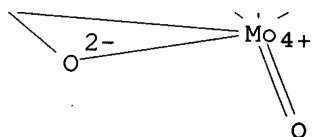
PAGE 1-A



PAGE 2-A



PAGE 3-A

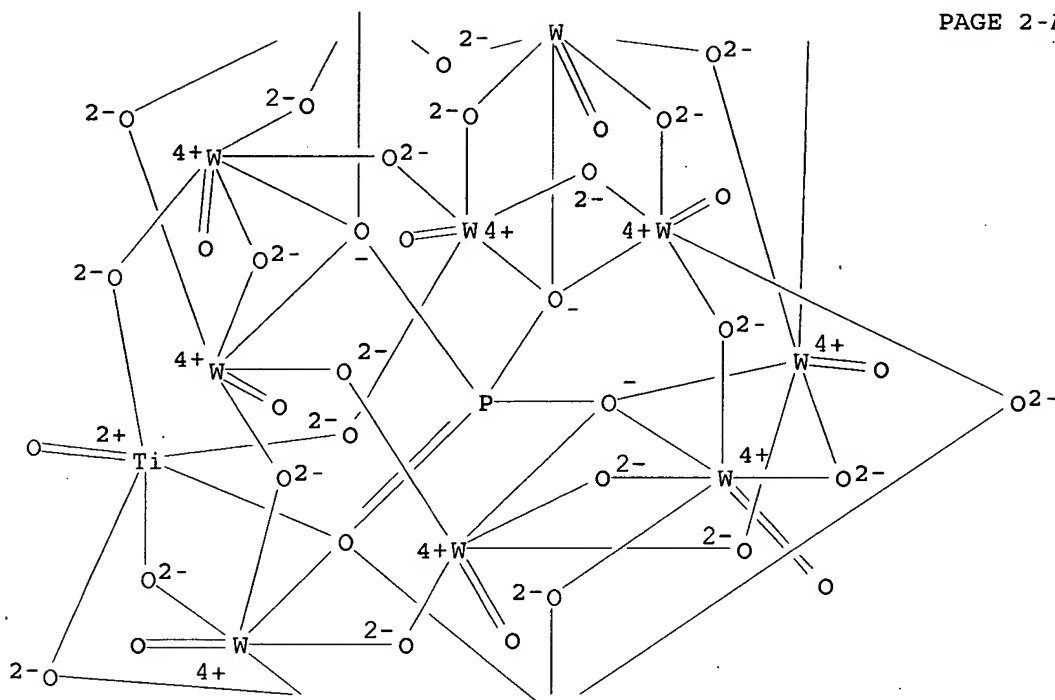


● 3 H<sup>+</sup>

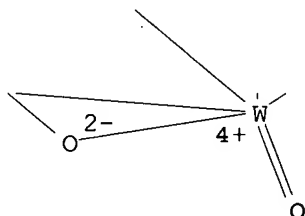
RN	104484-97-1	HCAPLUS
CN	Titanate(5-), (eicosa-μ-oxoundecaοxoundecatungstate) tetra-μ- οxoοxo [μ12-[phosphato(3-) -κO':κO':κO':κO' :κO ' :κO'':κO'':κO'':κO'':κO'':κO'':κO''] .kapp a.O''']]-, pentahydrogen (9CI). (CA INDEX NAME)	

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



PAGE 3-A

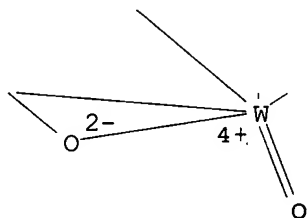
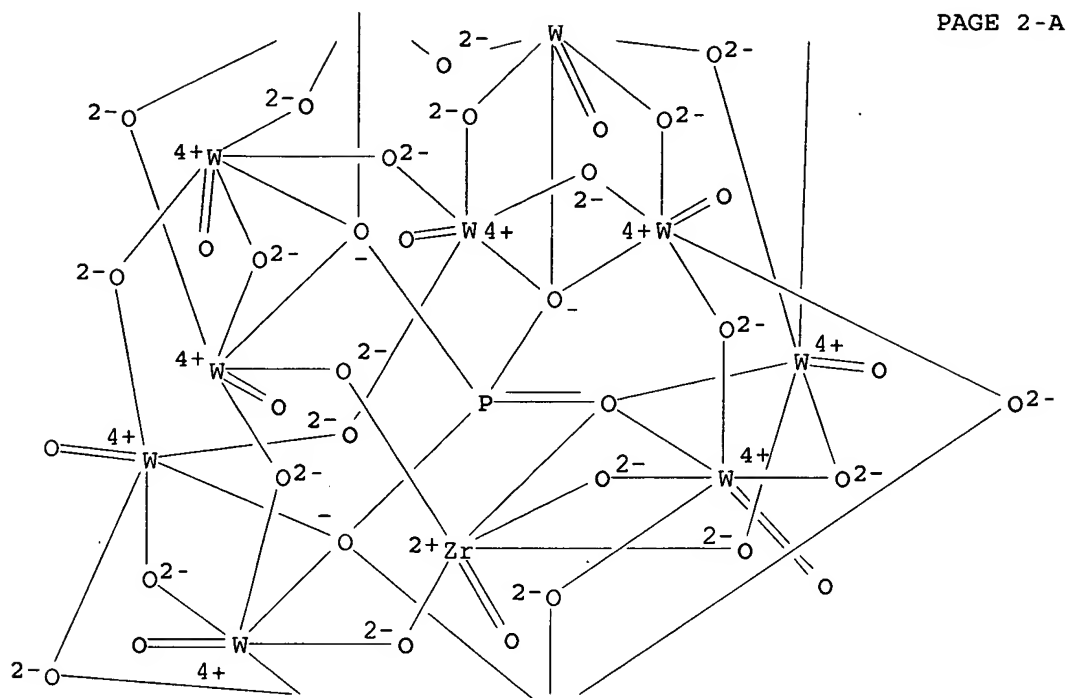


● 5 H<sup>+</sup>

RN    146066-47-9   HCAPLUS  
CN    Zirconate(5-), (eicosa-μ-oxoundecaοxoundecatungstate) tetra-μ-  
     οxoοxo [μ12- [phosphato(3-) -κO:κO:κO:κO':κO  
     ':κO':κO'':κO'':κO'':κO'':κO'':κO'':κO'':κO'  
     a.O''']] -, pentahydrogen (9CI)    (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*





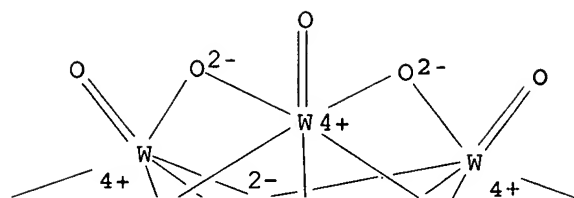
● 5 H<sup>+</sup>

IT 146703-29-9 328564-39-2  
 RL: CAT (Catalyst use); USES (Uses)  
 (coupling of phenol with ketones in the presence of heteropoly acids)  
 RN 146703-29-9 HCAPLUS  
 CN Cerate(10-), bis[eicosa-μ-oxoundecaaxo [μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'']]undecatungstate]octa-μ-oxo-, decahydrogen (9CI) (CA INDEX NAME)

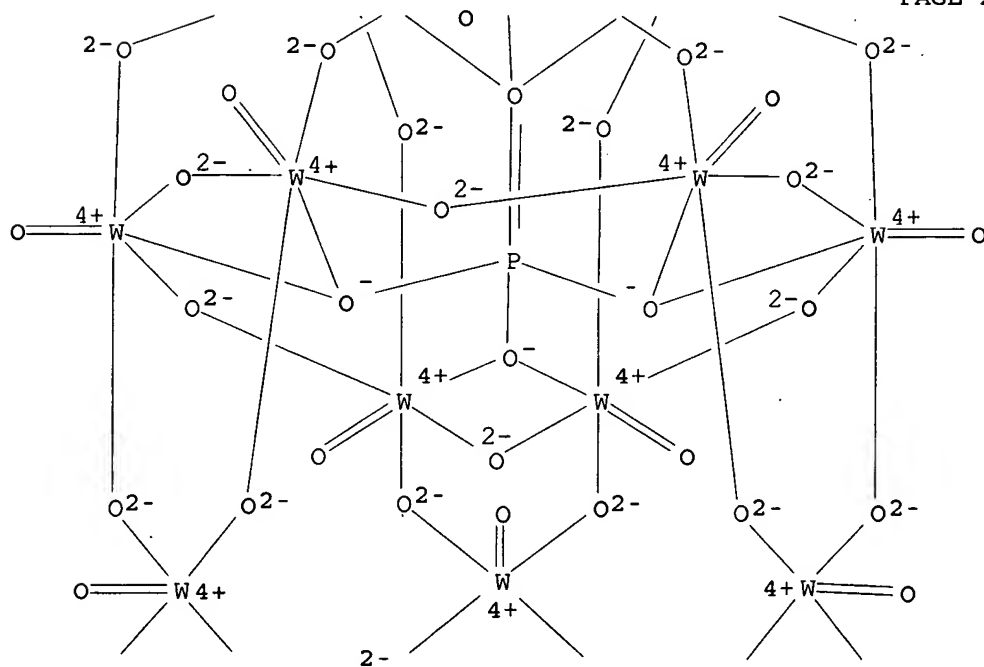
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

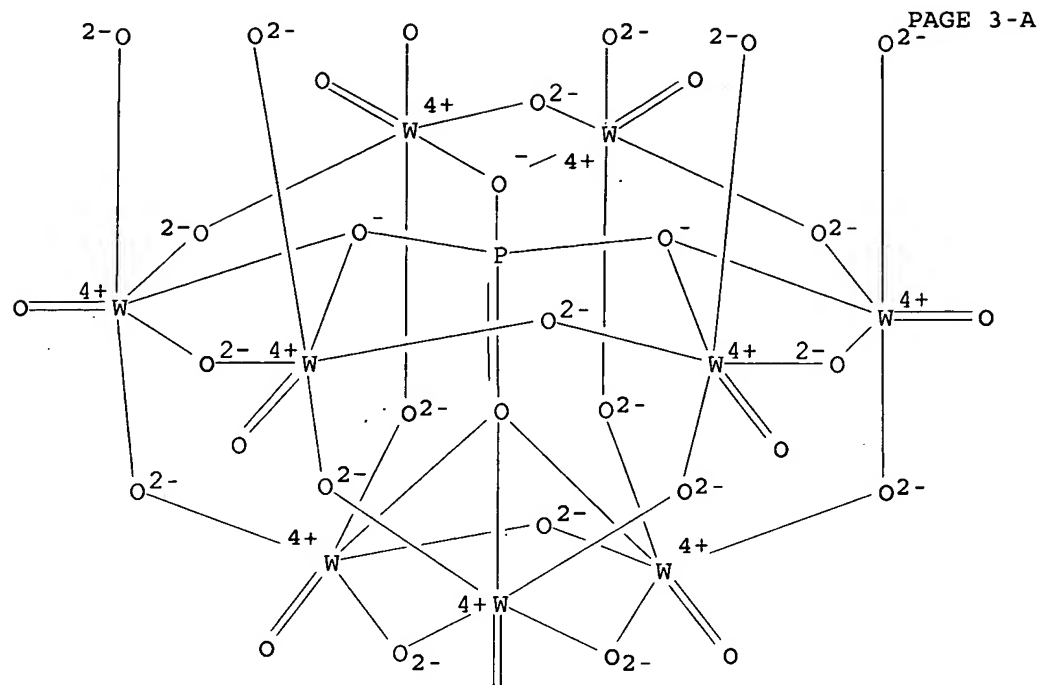
RN 328564-39-2 HCAPLUS  
 CN Tungstate(6-), dotetraconta-μ-oxoheneicosaoxobis [μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.a.O'':κO'']]heneicosa-, hexahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A





PAGE 4-A

O

● 6 H<sup>+</sup>

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

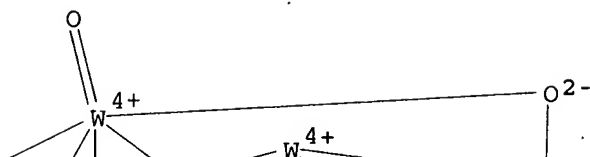
L32 ANSWER 43 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2000:861650 HCAPLUS  
DN 134:17282  
TI Process and hetero polyacid catalysts for the preparation of peroxy ketals  
from ketones and hydroperoxides  
IN Frenkel, Peter; Pettijohn, Ted M.  
PA Crompton Corporation, USA  
SO PCT Int. Appl., 12 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000073268	A1	20001207	WO 2000-US14560	20000525 <--
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,				

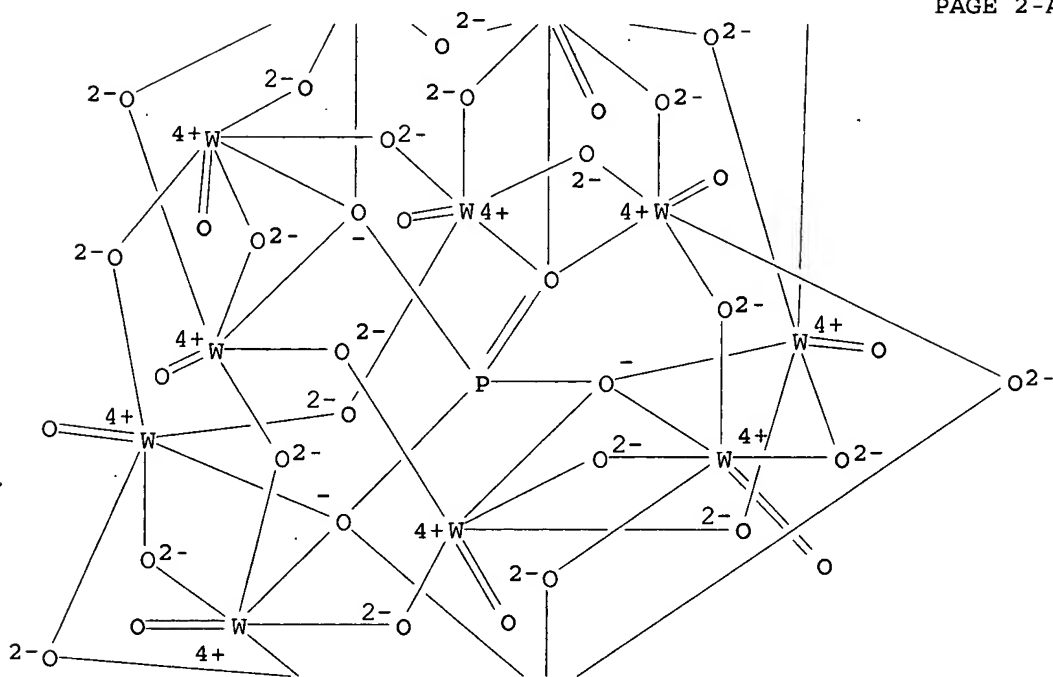
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN,  
 IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG,  
 MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
 TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,  
 MD, RU, TJ, TM  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,  
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,  
 CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
 US 6180832 B1 20010130 US 1999-321288 19990527 <--  
 EP 1100776 A1 20010523 EP 2000-937821 20000525 <--  
 EP 1100776 B1 20031015  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO  
 AT 252076 E 20031115 AT 2000-937821 20000525 <--  
 PRAI US 1999-321288 A 19990527 <--  
 WO 2000-US14560 W 20000525 <--  
 OS CASREACT 134:17282  
 AB Peroxy ketals [e.g., 1,1-bis(tert-butylperoxy)cyclohexane] are prepared in  
 high yield and selectivity by reacting an aqueous composition comprising  
 a ketone (e.g., cyclohexanone) and a hydroperoxide (e.g., tert-Bu  
 hydroperoxide) in the presence of a heteropoly acid (e.g., phosphotungstic  
 acid) catalyst.  
 IC ICM C07C409-22  
 ICS C07C407-00  
 CC 24-5 (Alicyclic Compounds)  
 Section cross-reference(s): 21, 67  
 IT 1343-93-7, Phosphotungstic acid  
 RL: CAT (Catalyst use); USES (Uses)  
 (process and heteropoly acid catalysts for the preparation of  
 peroxy ketals from ketones and hydroperoxides)  
 IT 1343-93-7, Phosphotungstic acid  
 RL: CAT (Catalyst use); USES (Uses)  
 (process and heteropoly acid catalysts for the preparation of  
 peroxy ketals from ketones and hydroperoxides)  
 RN 1343-93-7 HCAPLUS  
 CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

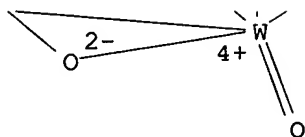
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 44 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:780819 HCAPLUS

DN 133:336871

TI Preparation of catalysts for gas-phase oxidation of ethylene and manufacture of acetic acid therewith

IN Obana, Yoshiaki; Abe, Kenichi; Uchida, Hiroshi; Sano, Kenichi

PA Showa Denko K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

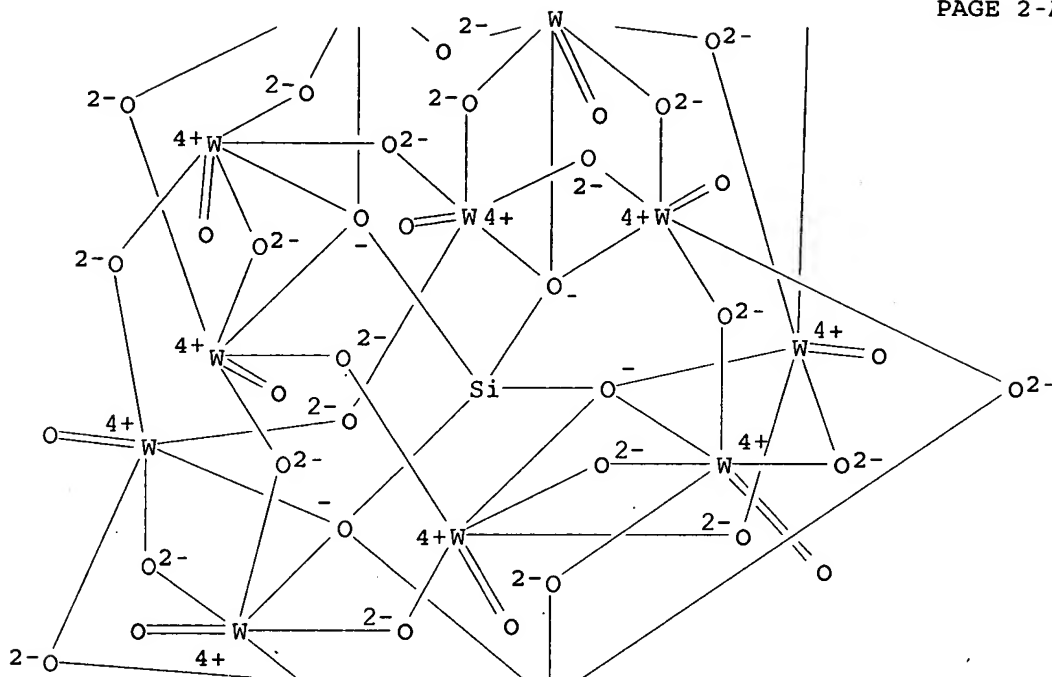
LA Japanese

FAN.CNT 1

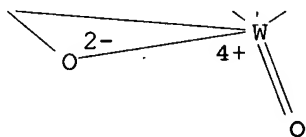
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000308830	A2	20001107	JP 1999-106359	19990414 <--
PRAI	JP 1999-49739	A	19990226	<--	
AB	Supported Pd metal and heteropoly acid (salt) catalysts are prepared in 4 steps, i.e., (1) impregnation of an aqueous solution of H <sub>2</sub> O-soluble Pd compds. into a catalyst support, (2) contacting the impregnated support with a solution of Ba salts which react with the H <sub>2</sub> O-soluble Pd compds. to form H <sub>2</sub> O-insol. Pd compds. on the support, (3) reduction of the supported Pd compds. into Pd metal, and (4) supporting heteropoly acids and/or their salts also on the resulting support. Thus, spherical SiO <sub>2</sub> (KA 1) was immersed in an aqueous solution of Na <sub>2</sub> PdCl <sub>4</sub> , treated with an aqueous Ba(OH) <sub>2</sub> ·8H <sub>2</sub> O solution, further treated with N <sub>2</sub> H <sub>4</sub> ·H <sub>2</sub> O, washed, dried, immersed in an aqueous solution of H <sub>4</sub> SiW <sub>12</sub> O <sub>40</sub> ·nH <sub>2</sub> O, and dried to give a supported catalyst showing high space time yield in reaction of a mixture gas of ethylene, O, H <sub>2</sub> O, and N into AcOH.				
IC	ICM B01J023-652				
CC	ICS B01J023-44; C07C051-21; C07C053-08; C07B061-00				
	45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)				
	Section cross-reference(s): 67				
IT	1333-78-4, Potassium antimonate 7646-85-7, Zinc chloride, processes 7783-08-6, Selenic acid 10102-20-2, Sodium tellurite 10361-44-1, Bismuth nitrate 10431-47-7 11120-48-2, Telluric acid 1207-38-2, Silicotungstic acid (H <sub>4</sub> SiW <sub>12</sub> O <sub>40</sub> ) 16903-35-8, Chloroauric acid 39345-92-1, Chromium chloride				
	RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)				
	(preparation of supported palladium/heteropoly acid catalysts for oxidation of ethylene into acetic acid)				
IT	12027-38-2, Silicotungstic acid (H <sub>4</sub> SiW <sub>12</sub> O <sub>40</sub> )				
	RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)				
	(preparation of supported palladium/heteropoly acid catalysts for				



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

L32 ANSWER 45 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2000:735119 HCAPLUS  
 DN 134:60670  
 TI Polyoxometallate-Modified Fabrics: New Catalytic Materials for  
 Low-Temperature Aerobic Oxidation  
 AU Xu, Ling; Boring, Eric; Hill, Craig L.  
 CS Department of Chemistry, Emory University, Atlanta, GA, 30322, USA  
 SO ☒ Journal of Catalysis (2000), 195(2), 394-405  
 CODEN: JCTLA5; ISSN: 0021-9517  
 PB Academic Press  
 DT Journal  
 LA English  
 AB The polyoxometalate H5PV2Mo10O40 (1) is deposited on cotton cloth,  
 polyacrylic fiber, nylon fiber, carbon powder (Ambersorb 572), and the  
 Japanese "self-deodorizing" fabric Smoklin by immersion of these materials  
 in aqueous solns. of 1 followed by evaporation of water. DRIFT spectra and chemical



reactivity indicate that 1 is not damaged during deposition on the materials. More significantly, they catalyze O<sub>2</sub>-based oxidns. of two representative and common toxics in air, acetaldehyde and 1-propanethiol, in addition to a representative thioether, tetrahydrothiophene. These aerobic oxidns. proceed heterogeneously with the substrates in the liquid phase and under unusually mild conditions (mostly ambient temperature and pressure). One representative reaction, CH<sub>3</sub>CHO + O<sub>2</sub> CH<sub>3</sub>COOH, catalyzed by several 1-fabric materials is examined in some detail. Kinetics, radical scavenging, and other expts. are consistent with the 1-fabric functioning primarily as a radical chain initiator. Surface area measurements and SEM of two representative materials, 1-polyacrylic and 1-Smoklin, before and after deposition of 1 and after catalysis indicate that the fibers are not demonstrably altered by deposition of 1, and that the 1-fabric catalysts are not significantly deactivated by use. In all cases, the surface areas are <0.5 m<sup>2</sup>/g by BET N<sub>2</sub> adsorption, and the deposition morphol. is clumps of 1 microcrystals covering <5% of the fiber/cloth surface. Smoklin, designed and specified to be effective at removing the toxic and/or odorous mols. at ambient temperature, does not exhibit significant activity for catalytic O<sub>2</sub> oxidns. in our evaluations. In contrast, 1-Smoklin is quite active for all these processes. (c) 2000 Academic Press.

CC 59-4 (Air Pollution and Industrial Hygiene)

IT 12293-21-9 148618-33-1, Ambersorb 572 215595-07-6

RL: CAT (Catalyst use); USES (Uses)

(polyoxometallate-modified fabrics as catalysts for low-temperature aerobic oxidation)

IT 12293-21-9 215595-07-6

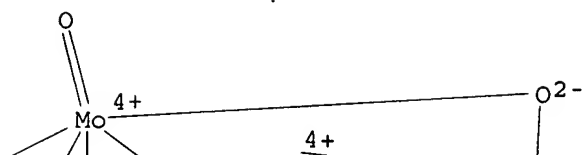
RL: CAT (Catalyst use); USES (Uses)

(polyoxometallate-modified fabrics as catalysts for low-temperature aerobic oxidation)

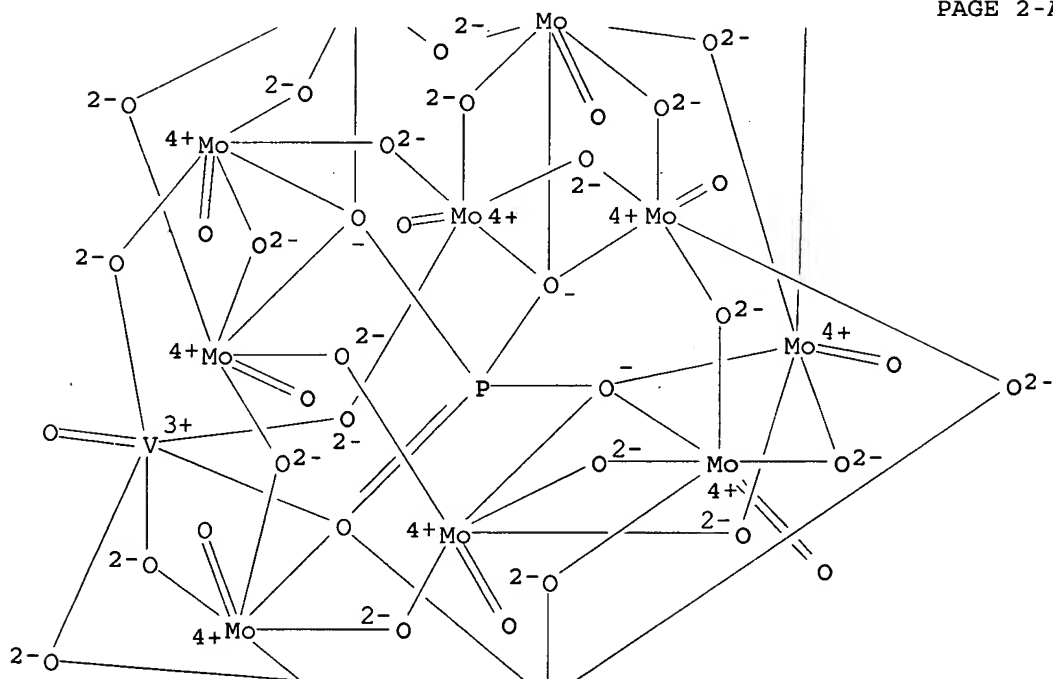
RN 12293-21-9 HCAPLUS

CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ<sub>12</sub>-(phosphato(3-)-κO:κO:κO:κO':.kappa .O':κO':κO':κO':κO':κO':κO':.ka ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

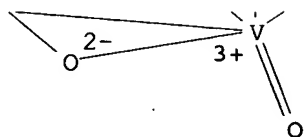
PAGE 1-A



PAGE 2-A



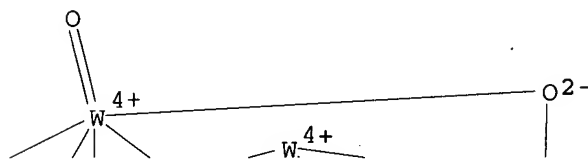
PAGE 3-A



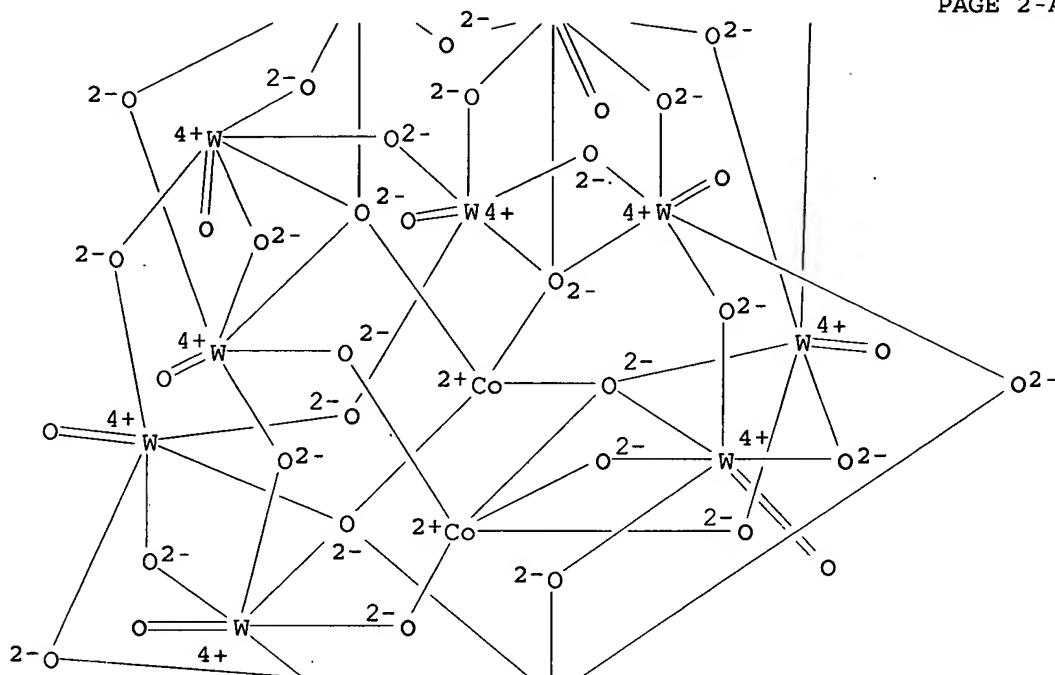
● 5 H<sup>+</sup>

RN 215595-07-6 HCAPLUS  
 CN Tungstate(8-), dicobaltatetetracosam-oxotetra-μ4-oxoundeca-oxoundeca-  
 , octapotassium (9CI) (CA INDEX NAME)

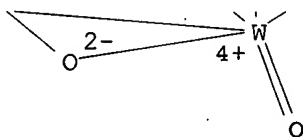
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 8 K<sup>+</sup>

RE.CNT 80 THERE ARE 80 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 46 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2000:586411 HCAPLUS  
DN 133:207485  
TI Active components and mechanism of isobutane alkylation with butenes in  
the catalytic system of HPAs + AcOH  
AU Zhao, Zhenbo; Sun, Wendong; Yang, Xiangguang; Ye, Xingkai; Wu, Yue  
CS Changchun Institute of Applied Chemistry, The Chinese Academy of Sciences,  
Changchun, 130022, Peop. Rep. China  
SO Wuli Huaxue Xuebao (2000), 16(7), 613-620  
CODEN: WHXUEU; ISSN: 1000-6818  
PB Beijing Daxue Chubanshe  
DT Journal  
LA Chinese  
AB The catalytic active phase (CAP) of a novel liquid catalyst for isobutane

alkylation with butenes was investigated, the composition of the CAP was analyzed. The components of the catalytic active phase were separated and examined by the methods of FTIR, UV and NMR. On the basis of these results, a reaction mechanism based on the formation of protonated heteropolyacid as an initial stage in the isobutane alkylation with butenes was postulated, which is in agreement with the exptl. results.

CC 22-4 (Physical Organic Chemistry)

Section cross-reference(s): 45, 51, 67

IT 1343-93-7, 12-Phosphotungstic acid 12027-38-2

RL: CAT (Catalyst use); USES (Uses)

(active components and mechanism of isobutane alkylation with butenes in the catalytic system of concentrated heteropolyacid solution in AcOH)

IT 1343-93-7, 12-Phosphotungstic acid 12027-38-2

RL: CAT (Catalyst use); USES (Uses)

(active components and mechanism of isobutane alkylation with butenes in the catalytic system of concentrated heteropolyacid solution in AcOH)

RN 1343-93-7 HCAPLUS

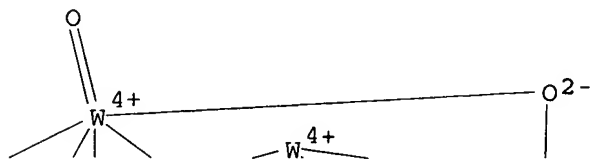
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':.kappa

.O'':κO'':κO'':κO'':κO'']dodeca-, trihydrogen

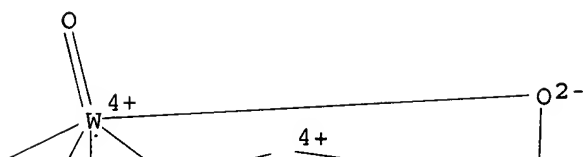
(9CI) (CA INDEX NAME)

PAGE 1-A

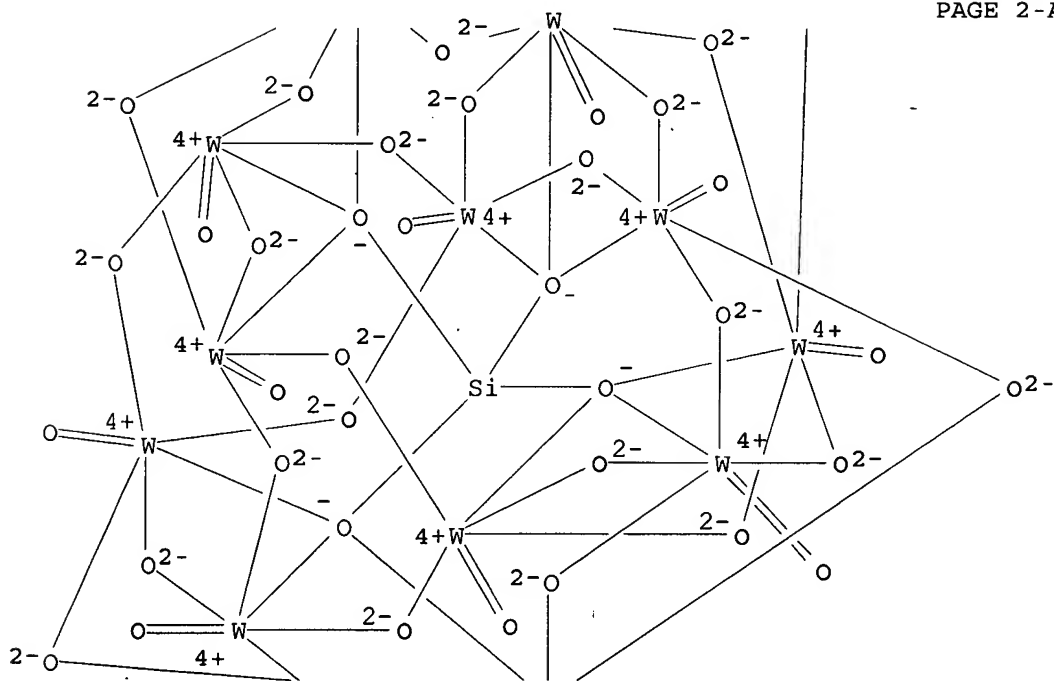




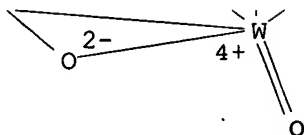
PAGE 1-A



PAGE 2-A



PAGE 3-A

 $\bullet_4 \text{H}^+$ 

L32 ANSWER 47 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2000:553484 HCAPLUS  
DN 133:152276  
TI Heteropoly acid catalysts supported on silica with low alkali metal  
content  
IN Coker, Eric Nicholas; Howard, Mark Julian; Smith, Warren John  
PA BP Chemicals Limited, UK  
SO PCT Int. Appl., 22 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2000045952	A1	20000810	WO 1999-GB4322	19991217 <---
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			

PRAI GB 1999-2676 A 19990206 <--  
AB The catalyst **composition** comprises a heteropoly acid or a partial acid salt thereof on a silica support, characterized in that the alkali metal content of the silica support is  $\leq 150$  ppm. The alkali metal content of the silica can be reduced by pretreating the support by acid washing. The catalyst can be used in olefin hydration and the preparation of esters from reaction of olefins and carboxylic acids.

IC ICM B01J021-08  
ICS B01J027-188; C07C029-04; C07C067-04; B01J037-02  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 67

IT 7631-86-9, Silica, uses 12027-38-2, 12-Tungstosilicic acid  
 RL: CAT (Catalyst use); USES (Uses)  
 (heteropoly acid catalysts supported on silica with low  
 alkali metal content for preparation of alcs. and esters)

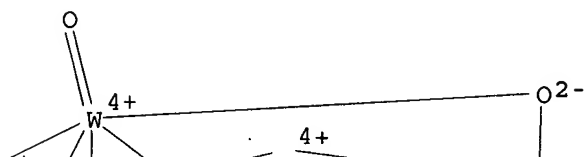
IT 12027-38-2, 12-Tungstosilicic acid  
RL: CAT (Catalyst use); USES (Uses)  
(heteropoly acid catalysts supported on silica with low  
alkali metal content for preparation of alcs. and esters)

```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
```

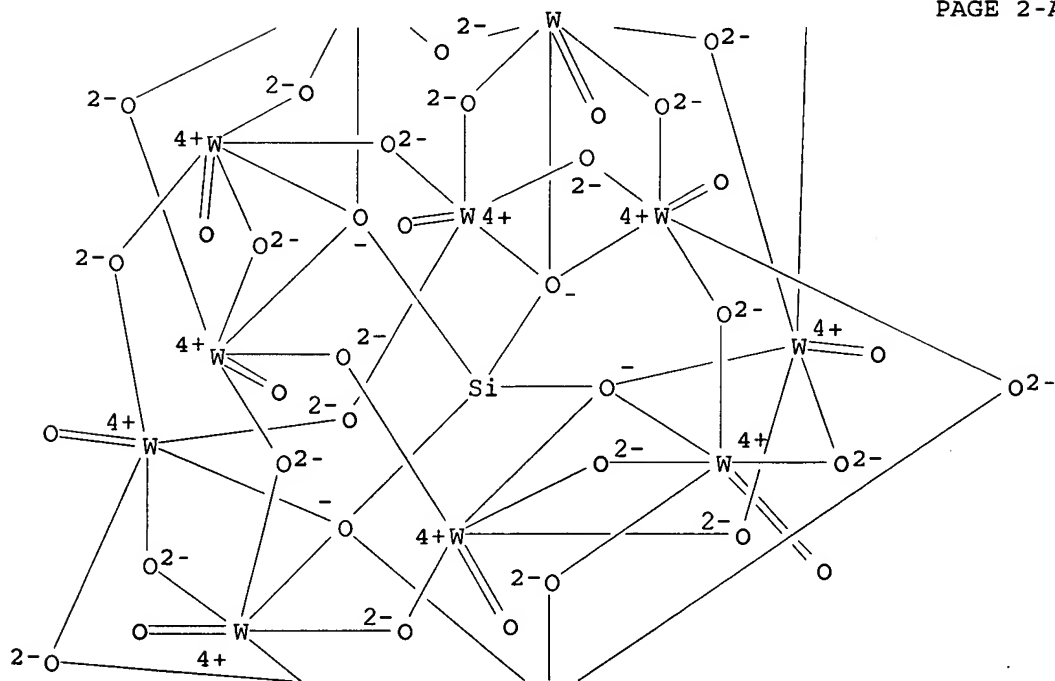


pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen  
(9CI) (CA INDEX NAME)

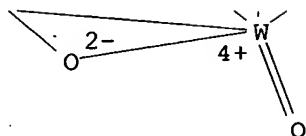
PAGE 1-A



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 48 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:393670 HCAPLUS

DN 133:19148

TI Method for bleaching laundry and household surfaces with polyoxometalates catalyst and air or molecular oxygen

IN Racherla, Uday Shanker; Chen, Qin

PA Unilever Home & Personal Care, USA

SO U.S., 7 pp.

CODEN: USXXAM

DT Patent

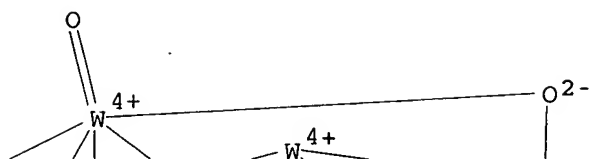
LA English

FAN.CNT 1

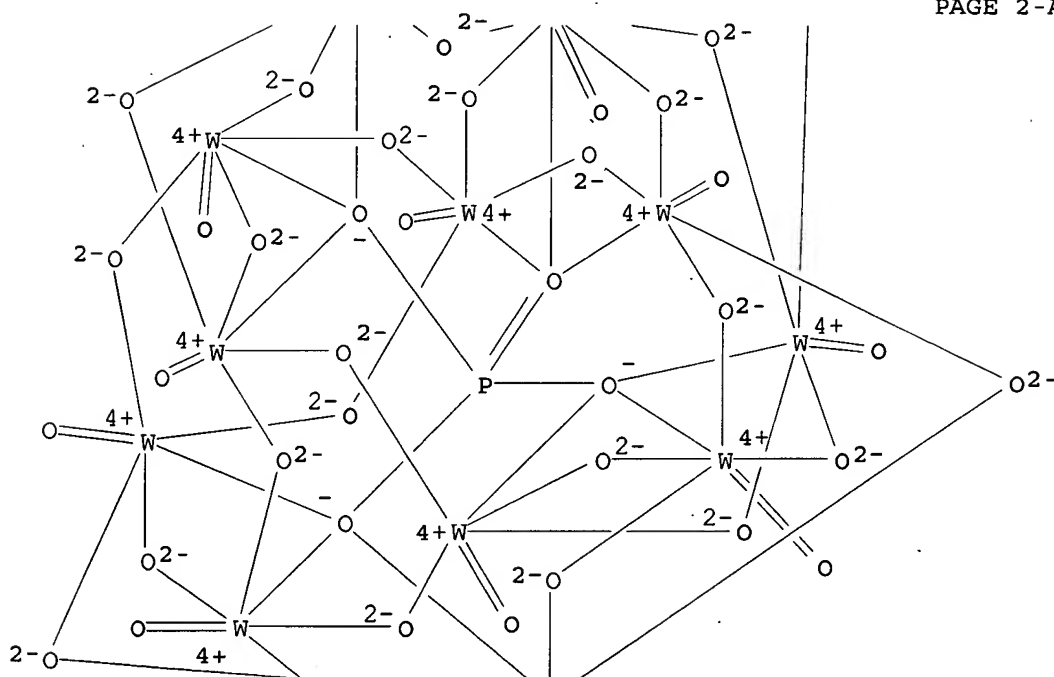
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6074437	A	20000613	US 1999-264191	19990305 <--
	CA 2355954	AA	20000706	CA 1999-2355954	19991129 <--
	WO 2000039264	A1	20000706	WO 1999-EP9330	19991129 <--
	W:			AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	RW:			GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	AU 2000016567	A5	20000731	AU 2000-16567	19991129 <--
	BR 9916538	A	20010904	BR 1999-16538	19991129 <--
	EP 1141210	A1	20011010	EP 1999-959370	19991129 <--
	EP 1141210	B1	20040225		
	R:			AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO	
	TR 200101823	T2	20011221	TR 2001-200101823	19991129 <--
	AT 260334	E	20040315	AT 1999-959370	19991129 <--
	ES 2215411	T3	20041001	ES 1999-959370	19991129 <--
	ZA 2001004131	A	20020521	ZA 2001-4131	20010521 <--
PRAI	US 1998-113606P	P	19981223	<--	
	US 1999-264191	A	19990305	<--	
	WO 1999-EP9330	W	19991129	<--	
AB	A method for bleaching laundry and household surfaces comprises providing a wash medium with a bleaching <b>composition</b> containing a polyoxometalate				



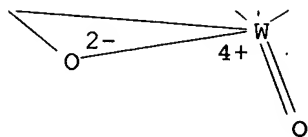
PAGE 1-A



PAGE 2-A

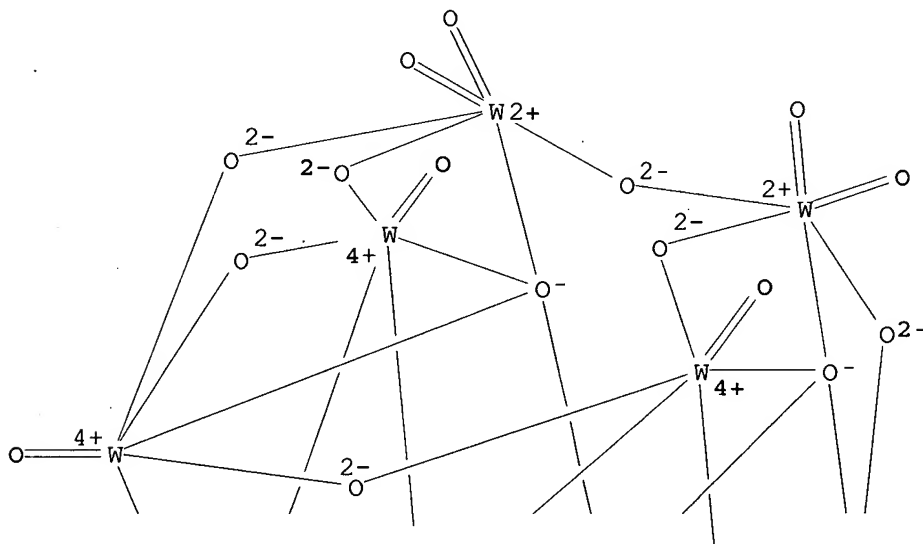


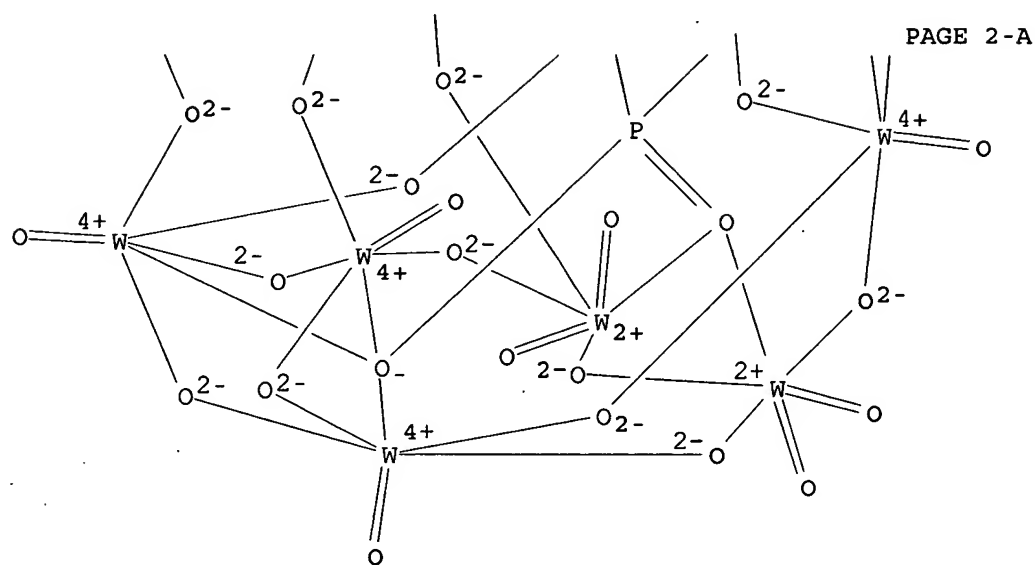
PAGE 3-A

●3 H<sup>+</sup>

RN 37300-94-0 HCAPLUS  
 CN Tungstate(7-), eicosa-μ-oxopentadeca-oxo[μ11-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O'':κO'':κO'':κO'']undeca-, heptapotassium (9CI)  
 (CA INDEX NAME)

PAGE 1-A





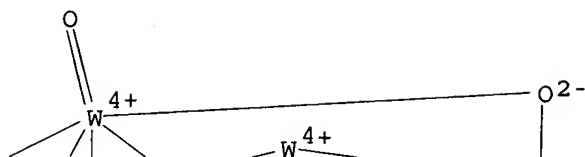
● 7 K<sup>+</sup>

RN 153481-12-0 HCAPLUS  
 CN Niobate(5-), (eicosa-μ-oxoundeca-oxoundecatungstate) [μ12-  
 [orthosilicato(4-)-κO:κO:κO:κO':κO':κO  
 ':κO':κO':κO':κO':κO':κO']]]te  
 tra-μ-oxoperoxy-, pentapotassium (9CI) (CA INDEX NAME)

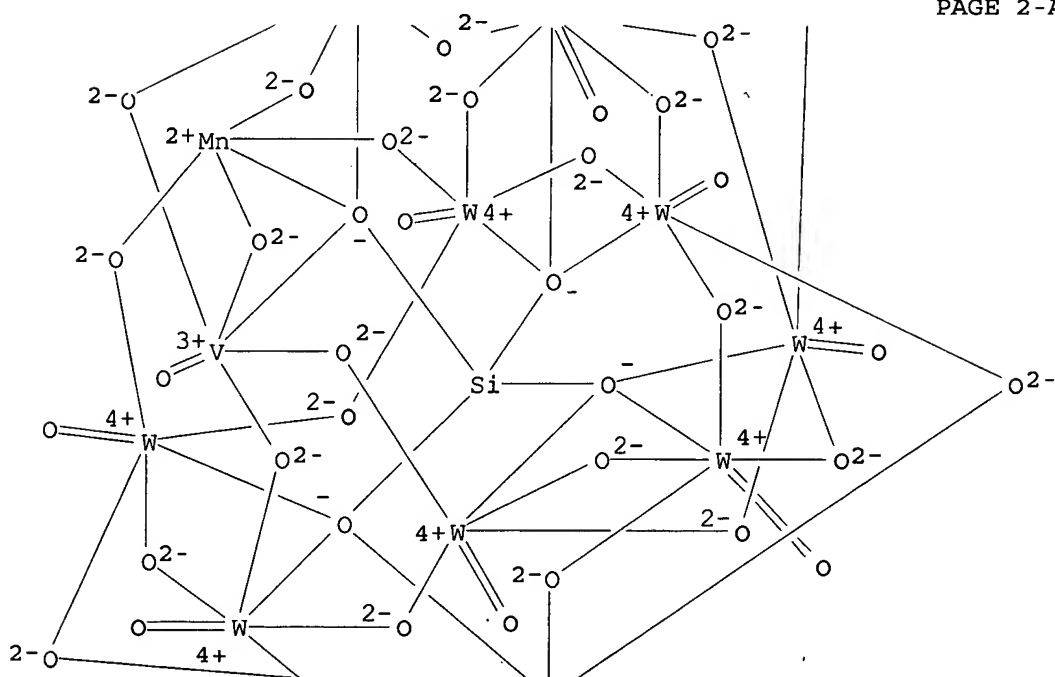
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 273201-40-4 HCAPLUS  
 CN Vanadate(7-), (heptadeca-μ-oxodeca-oxodecatungstate)manganate [μ12-  
 [orthosilicato(4-)-κO:κO:κO:κO':κO':κO  
 ':κO':κO':κO':κO':κO':κO']]]he  
 pta-μ-oxoxo-, heptapotassium (9CI) (CA INDEX NAME)

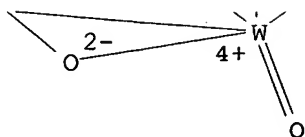
PAGE 1-A



PAGE 2-A

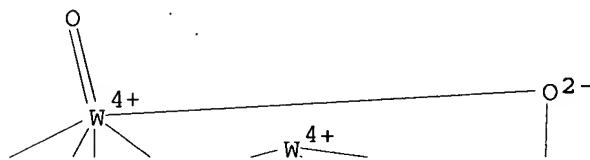


PAGE 3-A

●7 K<sup>+</sup>

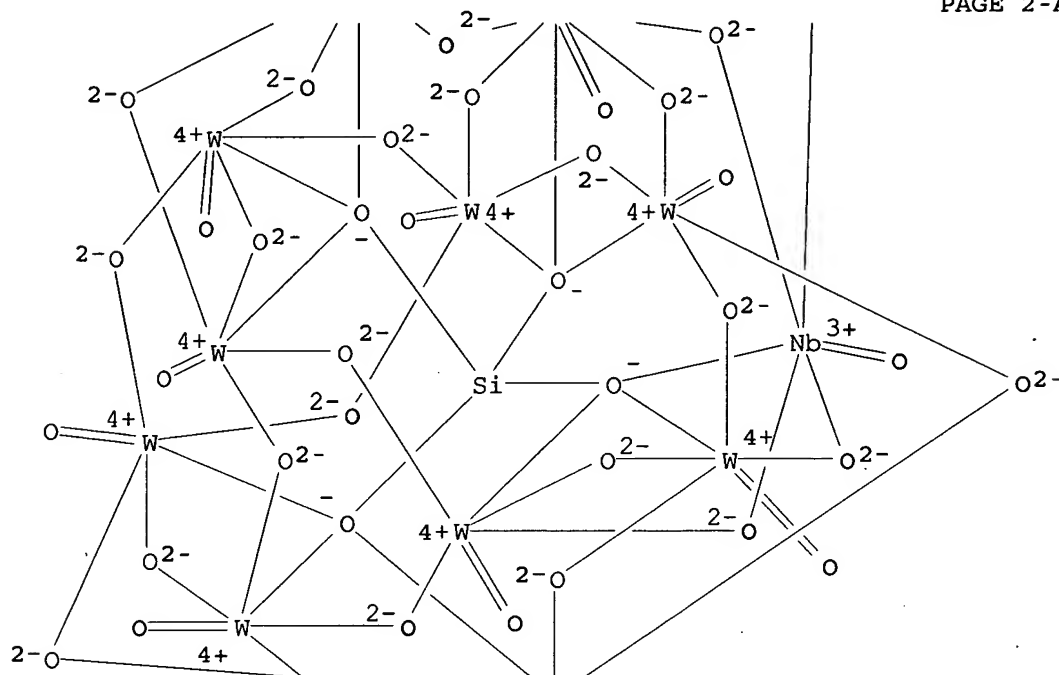
RN 273201-42-6 HCAPLUS  
 CN Niobate(5-), (eicosa-μ-oxoundeca-oxoundecatungstate) [μ12-  
 [orthosilicato(4-)-κO:κO:κO:κO':κO':κO'  
 ':κO':κO':κO':κO':κO':κO']}]te  
 tra-μ-oxoxo-, pentacesium (9CI) (CA INDEX NAME)

PAGE 1-A

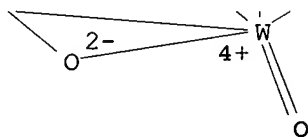




PAGE 2-A



PAGE 3-A



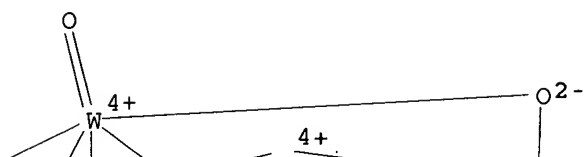
● 5 Cs<sup>+</sup>

```

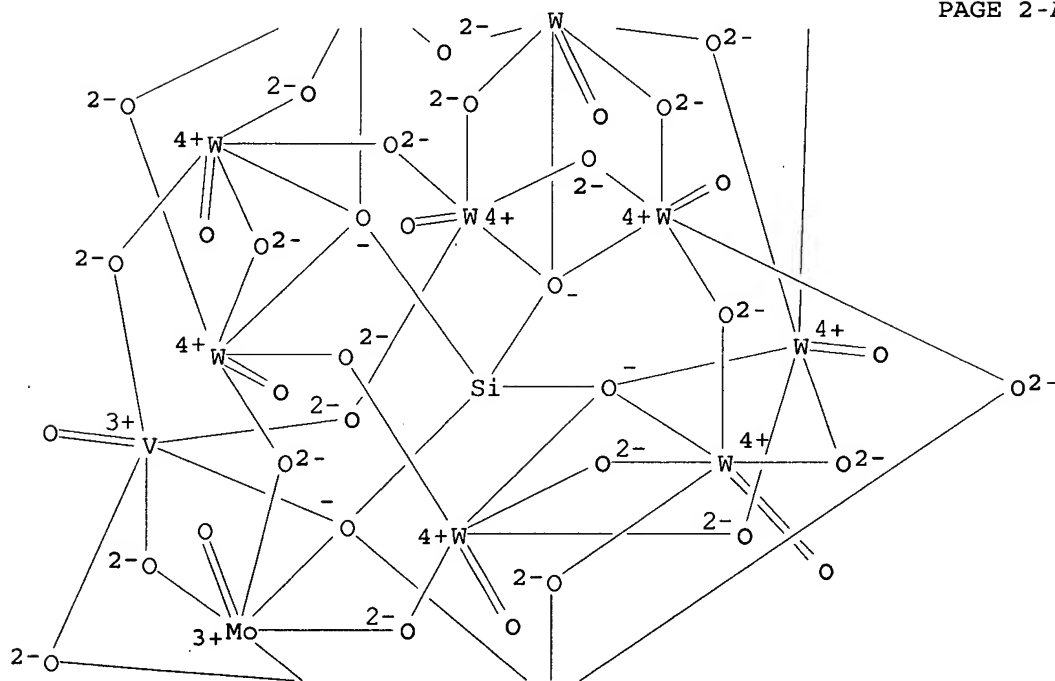
RN      273201-45-9   HCAPLUS
CN      Vanadate(7-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa
.O':κO':κO':κO'':κO'':κO'':κO'':.kapp
a.O'':κO'':κO'':κO'':κO'':κO'':κO'':κO'':.kapp
μ-oxononaoxononantungstate)-, heptapotassium (9CI) (CA INDEX NAME)

```

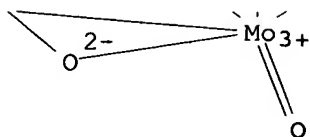
PAGE 1-A



PAGE 2-A

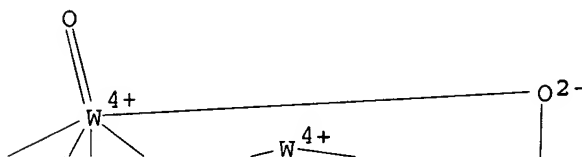


PAGE 3-A

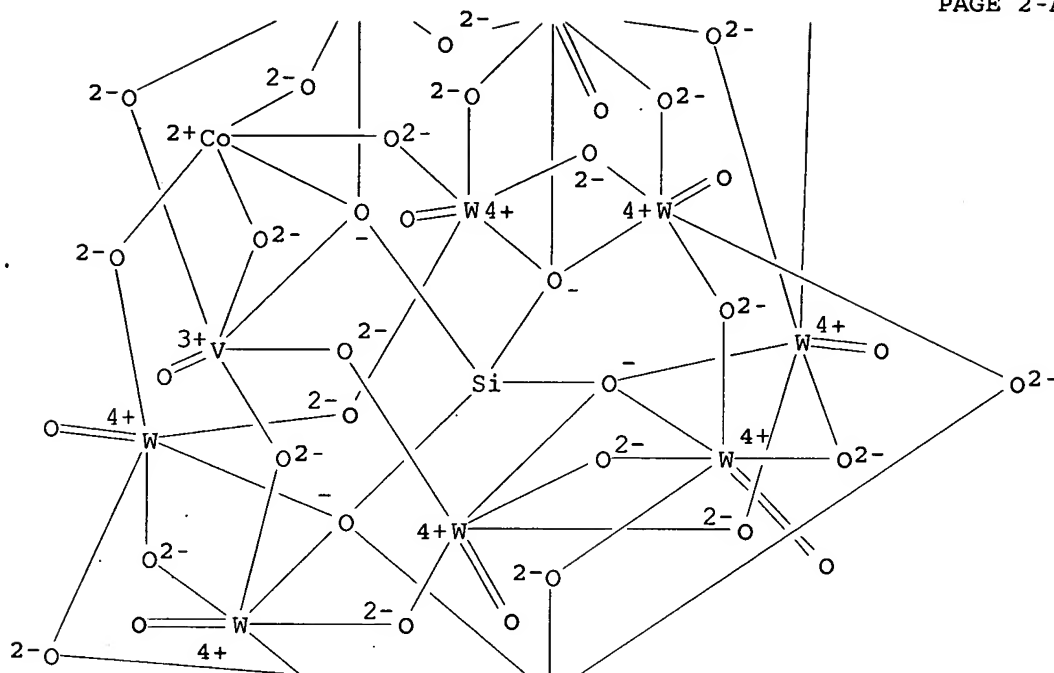
●7 K<sup>+</sup>

RN 273201-47-1 HCAPLUS  
 CN Vanadate(7-), cobaltate(heptadeca-μ-oxodecaoxodecatungstate) [μ12-  
 [orthosilicato(4-)-κO:κO:κO:κO':κO':κO  
 ':κO':κO':κO':κO':κO':κO']}]he  
 pta-μ-oxooxo-, heptapotassium (9CI) (CA INDEX NAME)

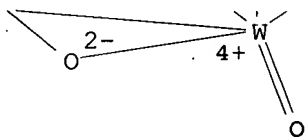
PAGE 1-A



PAGE 2-A



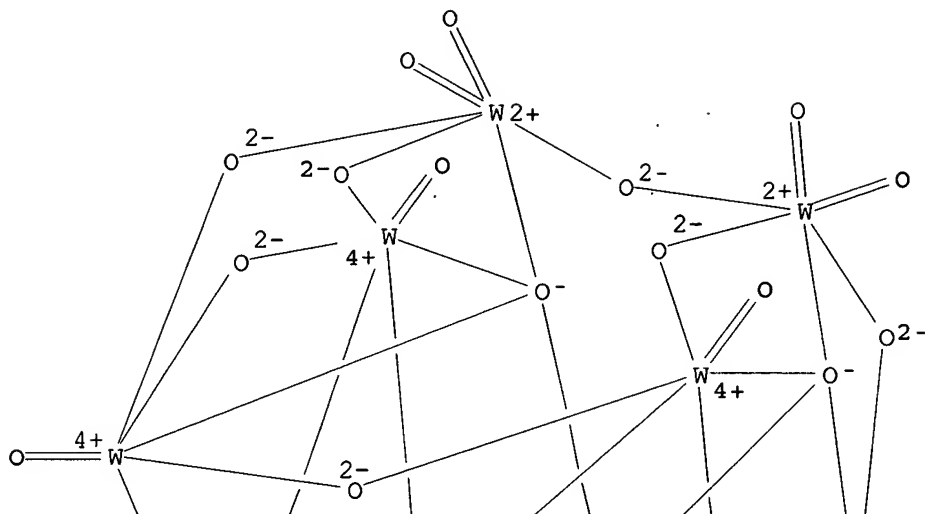
PAGE 3-A



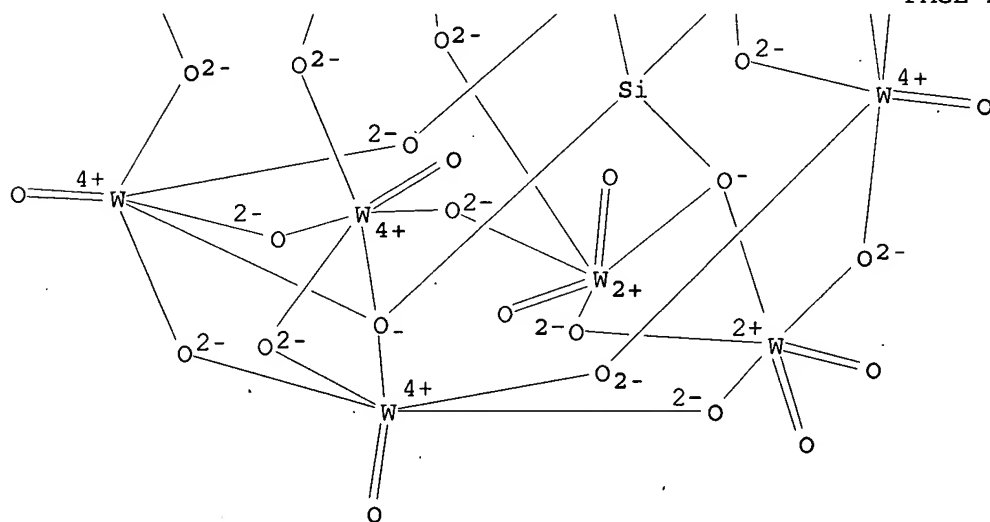
● 7 K<sup>+</sup>

```
IT      37300-95-1P, Potassium tungstosilicate (K8(SiW11O39))  
       102073-48-3P 174832-28-1P 261504-16-9P  
       RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP  
         (Preparation); USES (Uses)  
         (method for bleaching laundry and household surfaces with  
           polyoxometalates catalyst and air or mol. oxygen)  
RN      37300-95-1 HCAPLUS  
CN      Tungstate(8-), [μ11-{orthosilicato(4-)-κO:κO:κO:.kapp  
        a.O':κO':κO':κO'':κO'':κO'':κO'':κO'':κO'':κO'':κO'  
        pa.O'''}]eicosa-μ-oxopentadeca-oxoundeca-, octapotassium (9CI) (CA  
INDEX NAME)
```

PAGE 1-A



PAGE 2-A



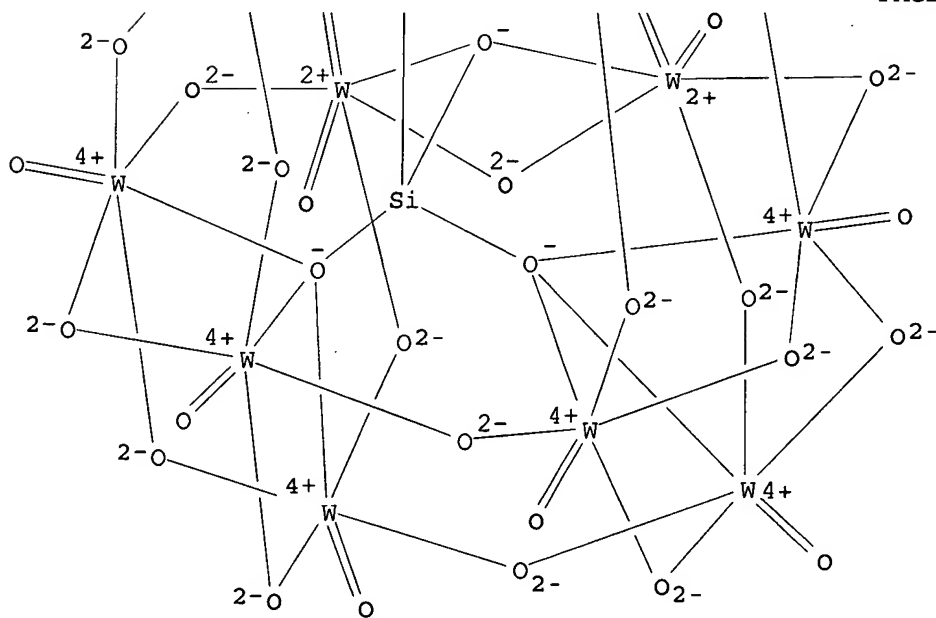
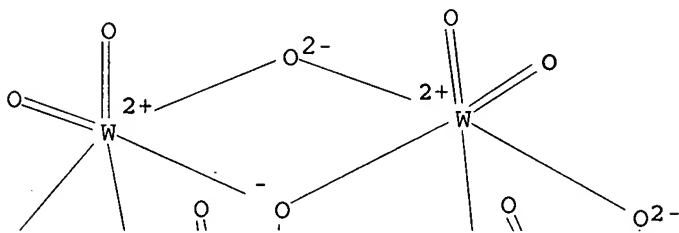
PAGE 3-A

● 8 K<sup>+</sup>

RN 102073-48-3 HCAPLUS

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PAGE 1-A

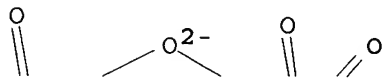


PAGE 3-A

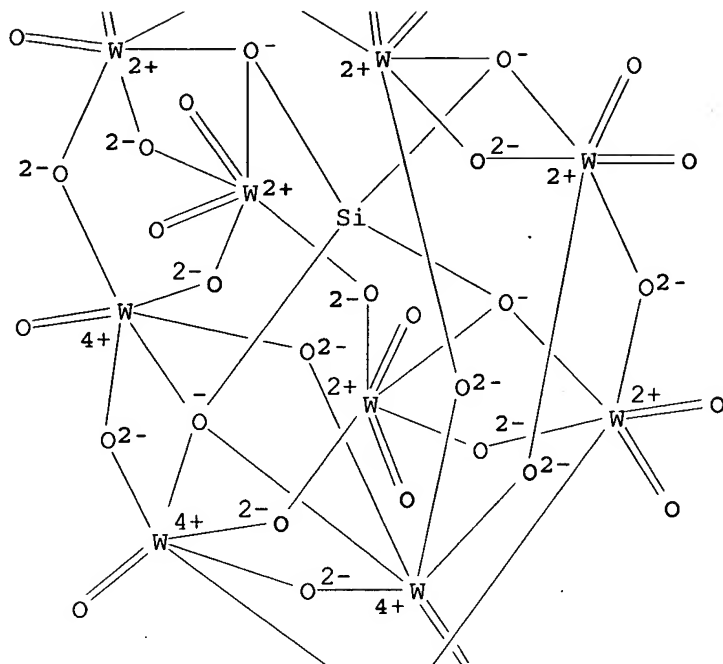
● 8 K<sup>+</sup>

RN 174832-28-1 HCAPLUS  
CN Tungstate(10-), [μ9-[orthosilicato(4-)-κO:κO:κO:.kapp  
a.O':κO':κO'':κO'':κO''':κO''']]pentadeca-  
μ-oxopentadecaoxonona-, decasodium (9CI) (CA INDEX NAME)

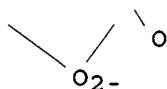
PAGE 1-A



PAGE 2-A



PAGE 3-A

●10 Na<sup>+</sup>

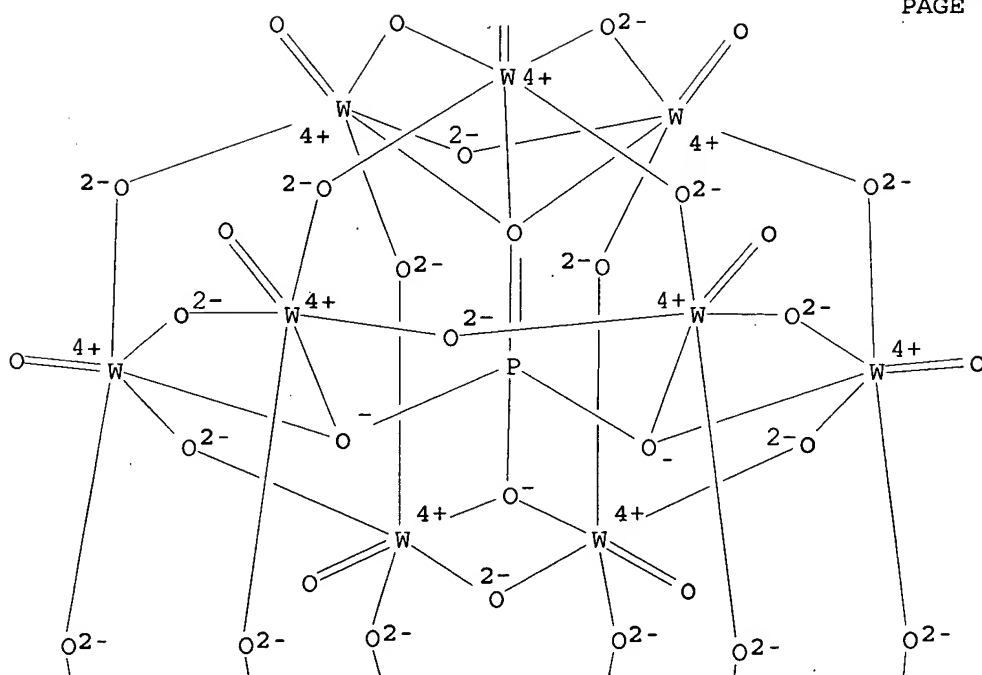
RN 261504-16-9 HCAPLUS  
 CN Tungstate(8-), (aquacuprate)hexatriaconta-μ-oxoheptadeca-oxobis[μ9-  
 [phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO''':κO''':κO''']heptadeca-, octapotassium (9CI) (CA  
 INDEX NAME)



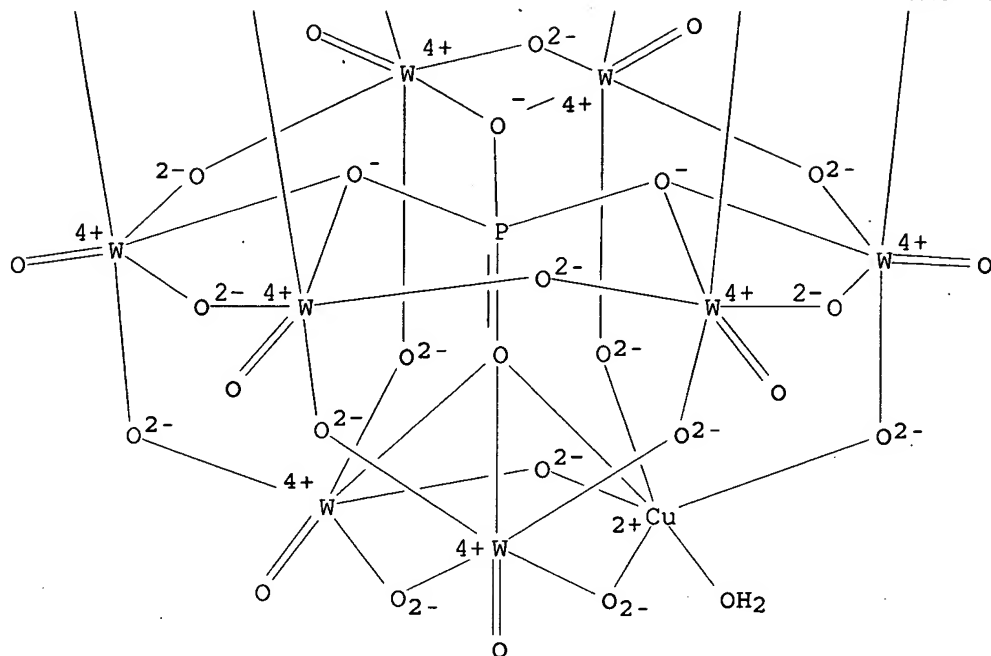
PAGE 1-A



PAGE 2-A



PAGE 3-A



PAGE 4-A

● 8 K<sup>+</sup>

L32 ANSWER 49 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2000:271960 HCAPLUS  
 DN 132:264885  
 TI The use of heteropolyacids as catalysts in the synthesis of ketone  
 peroxides  
 IN Frenkel, Peter; Nwoko, Delphine; Pettijohn, Ted M.  
 PA Witco Corporation, USA  
 SO U.S., 3 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6054625	A	20000425	US 1999-321287	19990527 <--
	WO 2000073267	A1	20001207	WO 2000-US14559	20000525 <--
	WO 2000073267	C2	20020620		
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,				

DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,  
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 1999-321287 A 19990527 <--

OS CASREACT 132:264885

AB Geminal dihydroperoxyalkyl peroxides and 1,1-dihydroperoxydialkyl peroxides are prepared in high yield and selectivity by reacting an aqueous composition comprising a ketone (e.g., 2-butanone) with hydrogen peroxide in the presence of a heteropolyacid (e.g., phosphotungstic acid).

IC ICM C07C409-00

INCL 568564000

CC 23-10 (Aliphatic Compounds)

Section cross-reference(s): 45, 67

IT 1343-93-7, Phosphotungstic acid

RL: CAT (Catalyst use); USES (Uses)

(use of heteropolyacids as catalysts in the synthesis of ketone peroxides)

IT 1343-93-7, Phosphotungstic acid

RL: CAT (Catalyst use); USES (Uses)

(use of heteropolyacids as catalysts in the synthesis of ketone peroxides)

RN 1343-93-7 HCAPLUS

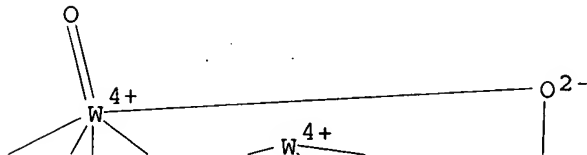
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':κappa

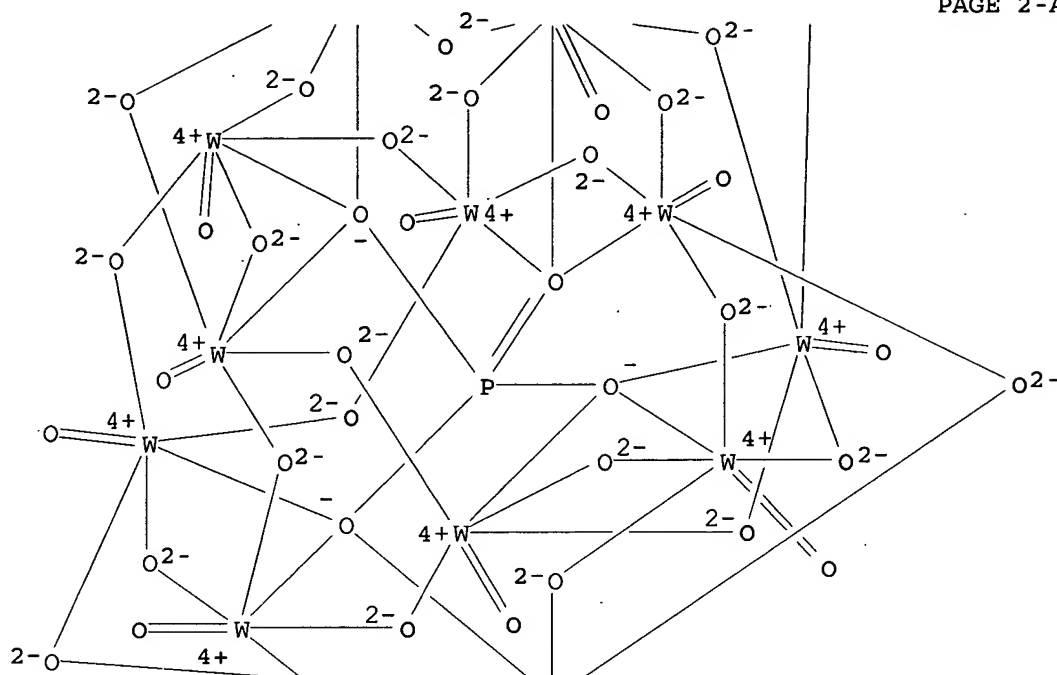
.O':κO':κO':κO':κO':κO'']dodeca-, trihydrogen

(9CI) (CA INDEX NAME)

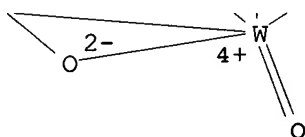
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 50 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2000:234613 HCAPLUS  
DN 133:209614  
TI Alkylation of benzene with long chain olefins over heteropoly acid  
H3PW12O40(PW)/MCM-41 catalysts  
AU Deng, Wei; Jin, Yingjie; Ren, Jie  
CS Department of Petrochemical Technology, Fushun Petroleum Institute,  
Liaoning Fushun, 113001, Peop. Rep. China  
SO Fushun Shiyu Xueyuan Xuebao (2000), 20(1), 38-42  
CODEN: FSXEE8; ISSN: 1005-3883  
PB Fushun Shiyu Xueyuan Xuebao Bianjibu  
DT Journal  
LA Chinese  
AB New solid acid catalysts, consisting of heteropoly acid H3PW12O40(PW) and

supported on a meso-porous mol. sieve MCM-41, were prepared, and characterized by x-ray diffraction, ammonia temperature programmed desorption, and nitrogen physisorption techniques. For the alkylation of benzene with 1-dodecene, the PW/MCM-41 composition with various PW loads was investigated and compared with HY zeolite on the effect of the composition, acidity, and pore structure on their catalytic performance. The PW/MCM-41 catalysts with PW load of 10% .apprx. 50%(weight) had stronger acidity and size-uniformed meso-pores because MCM-41 frameworks was mostly maintained and the heteropoly acid dispersed uniformly on the MCM-41 surface. The alkylation of the PW/MCM-41 compns. can be effectively controlled by controlling PW loads and pretreating temperature Compared to HY zeolite, the typical meso-porous catalyst with PW loads of 50 weight% exhibits not only much higher catalytic activity, stability and selectivity towards linear alkylbenzenes but also reasonable isomer distributions of Ph dodecane than that of HY zeolite in the alkylation reaction.

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

IT 1343-93-7

RL: CAT (Catalyst use); USES (Uses)  
(desorption of ammonia by heteropoly acid  
H3PW12O40 (PW)/MCM-41 catalysts)

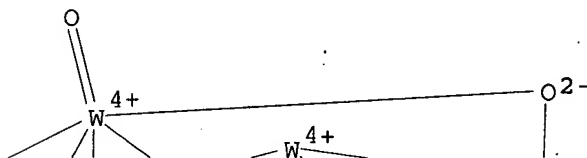
IT 1343-93-7

RL: CAT (Catalyst use); USES (Uses)  
(desorption of ammonia by heteropoly acid  
H3PW12O40 (PW)/MCM-41 catalysts)

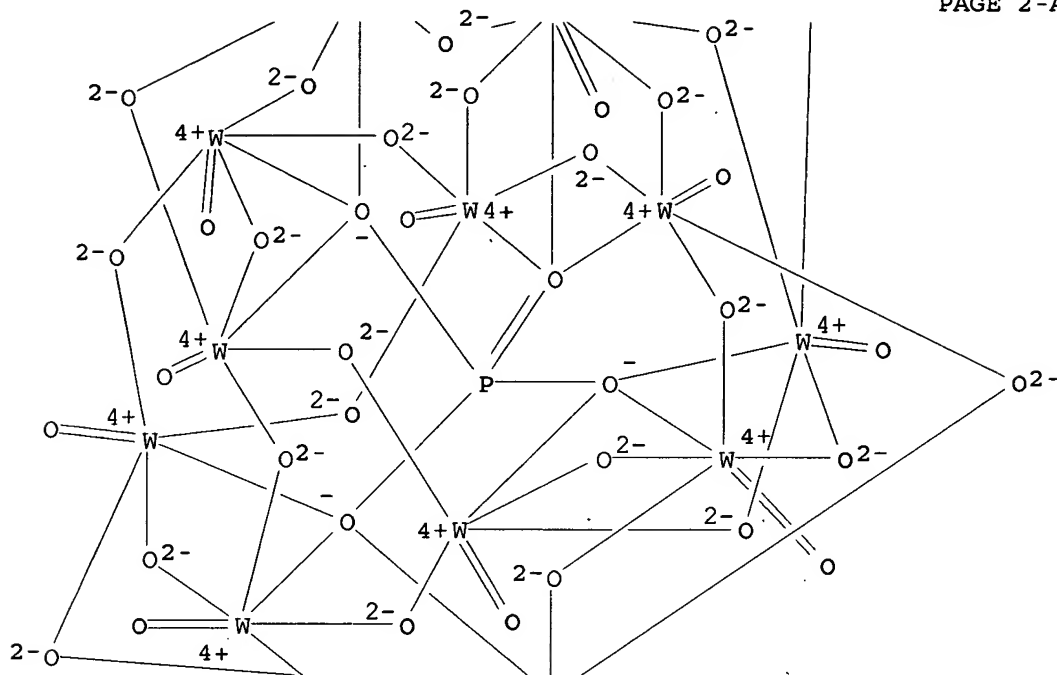
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':.kappa  
.O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

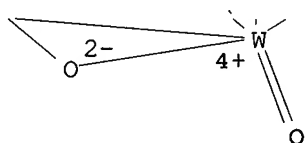
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

L32 ANSWER 51 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:425517 HCAPLUS

DN 131:47008

TI Heteropoly salts or acid salts deposited in the interior of porous supports

IN Soled, Stuart Leon; Paes, Jose Agustoda Costa; Gutierrez, Antonio; Miseo, Sabato; Gates, William E.; Riley, Kenneth L.

PA Exxon Research and Engineering Co., USA

SO U.S., 12 pp., Cont.-in-part of U.S. Ser. No. 156,178, abandoned.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PI US 5919725 A 19990706 US 1998-100596 19980619 <--  
 US 5866739 A 19990202 US 1997-902047 19970729 <--

PRAI US 1993-156178 B2 19931119 <--  
 US 1994-336364 B3 19941108 <--  
 US 1995-488665 B1 19950608 <--

AB The present invention relates to a catalyst **composition**, its methods of preparation and its use in aromatic alkylation processes. The **composition** comprises a heteropoly compound selected from the group consisting of heteropoly salts and heteropoly acid salts deposited in the interior of a porous support selected from the group consisting of silica, titania, and zirconia, wherein the salt of the heteropoly salt and the heteropoly acid salt is selected from the group consisting of ammonium, cesium, potassium, and rubidium salts and mixts. thereof, and wherein the heteropoly salt and the heteropoly acid salt are formed with a heteropoly acid selected from the group consisting of 12-tungstophosphoric, 12-tungstosilicic, 12-molybdophosphoric, and 12-molybdosilicic acid.

IC ICM B01J027-18  
 ICS B01J027-188

INCL 502210000

CC 51-11 (Fossil Fuels, Derivatives, and Related Products)  
 Section cross-reference(s): 35, 45, 67

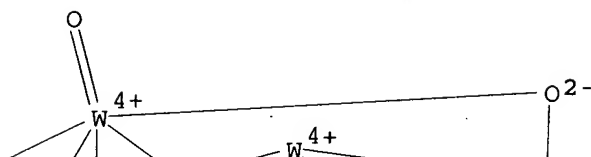
IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
 12-Molybdophosphoric acid 12027-12-2, 12-Molybdosilicic acid 12027-38-2, 12-Tungstosilicic acid  
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
 (heteropoly salts or acid salts deposited in interior of porous supports)

IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2,  
 12-Molybdophosphoric acid 12027-12-2, 12-Molybdosilicic acid 12027-38-2, 12-Tungstosilicic acid  
 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
 (heteropoly salts or acid salts deposited in interior of porous supports)

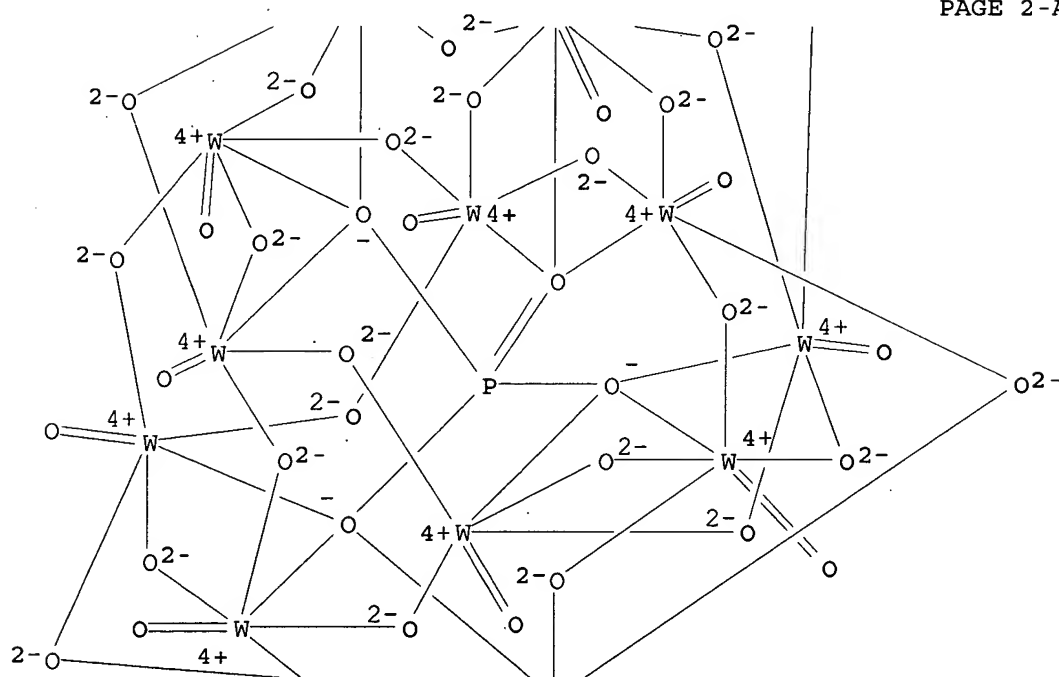
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A

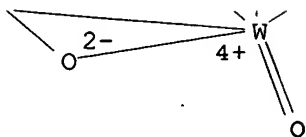


PAGE 2-A





PAGE 3 -A



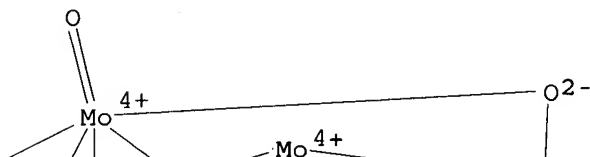
●<sub>3</sub> H<sup>+</sup>

```

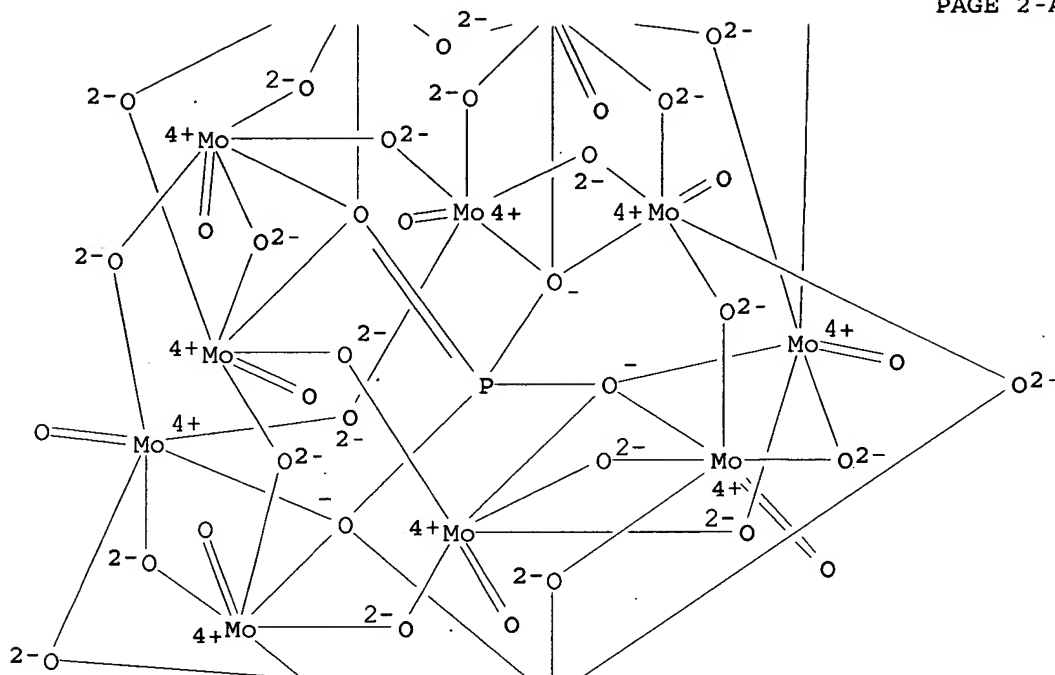
RN      12026-57-2   HCAPLUS
CN      Molybdate(3-), tetracosamolybdate(3-), tetracosamolybdate(3-),
        kappa[12-oxododecacosamolybdate(3-)]dodeca-, trihydrogen
        (9CI) (CA INDEX NAME)

```

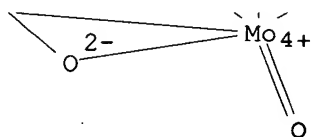
PAGE 1-A



PAGE 2-A



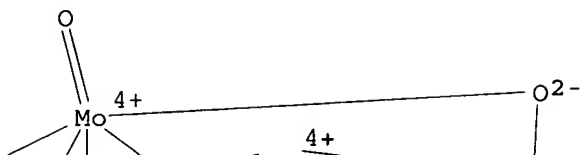
PAGE 3-A



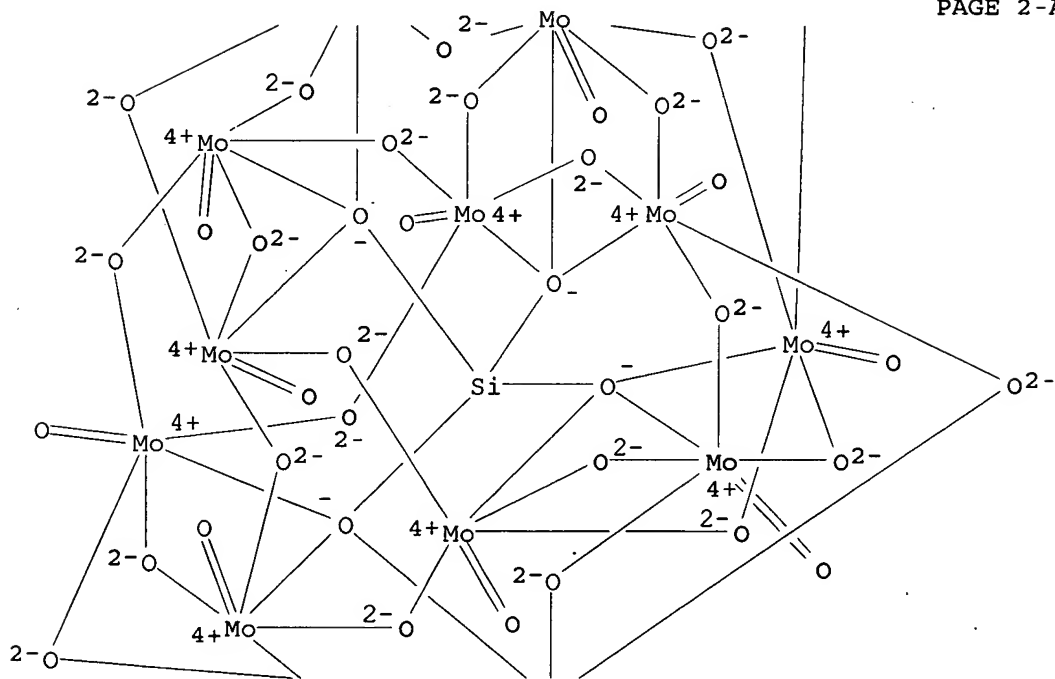
●<sub>3</sub> H<sup>+</sup>

```
RN      12027-12-2   HCAPLUS
CN      Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'']tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)    (CA INDEX NAME)
```

PAGE 1-A

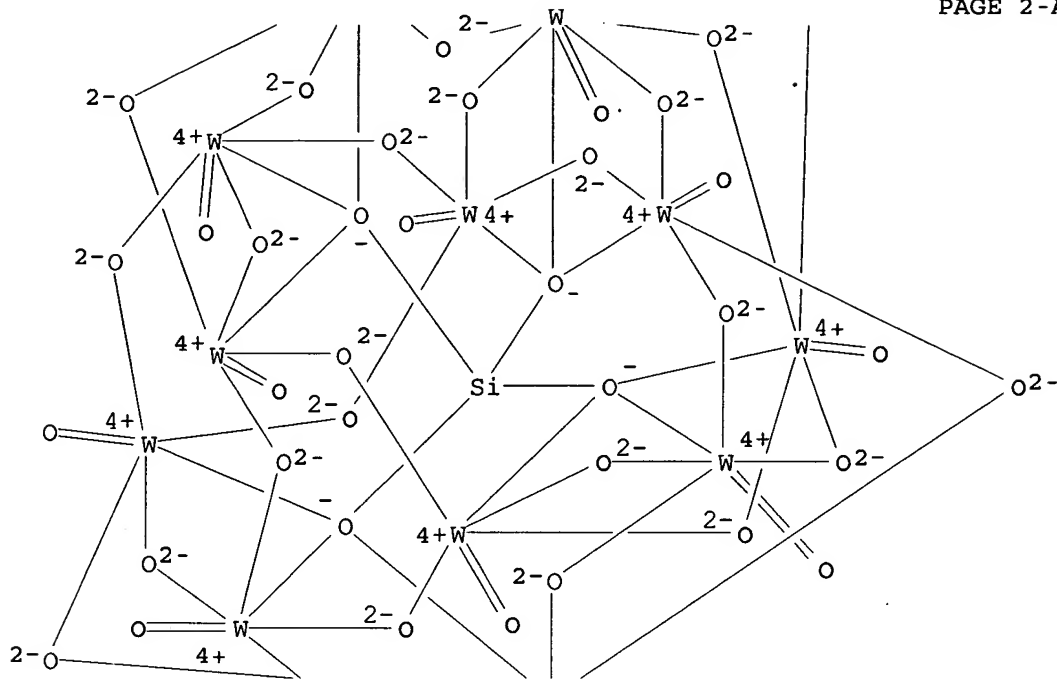


PAGE 2-A

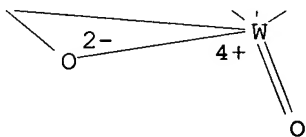




PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 52 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1999:375636 HCAPLUS  
DN 131:20590  
TI Polyoxometalate bleach catalysts in cleaning and detergent  
compositions  
IN Greenhill-Hooper, Michael John; Rey-Garcia, Fernando; Corma-Canos,  
Avelino; Jorda-Moret, Jose Luis  
PA U.S. Borax Inc., USA  
SO PCT Int. Appl., 41 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

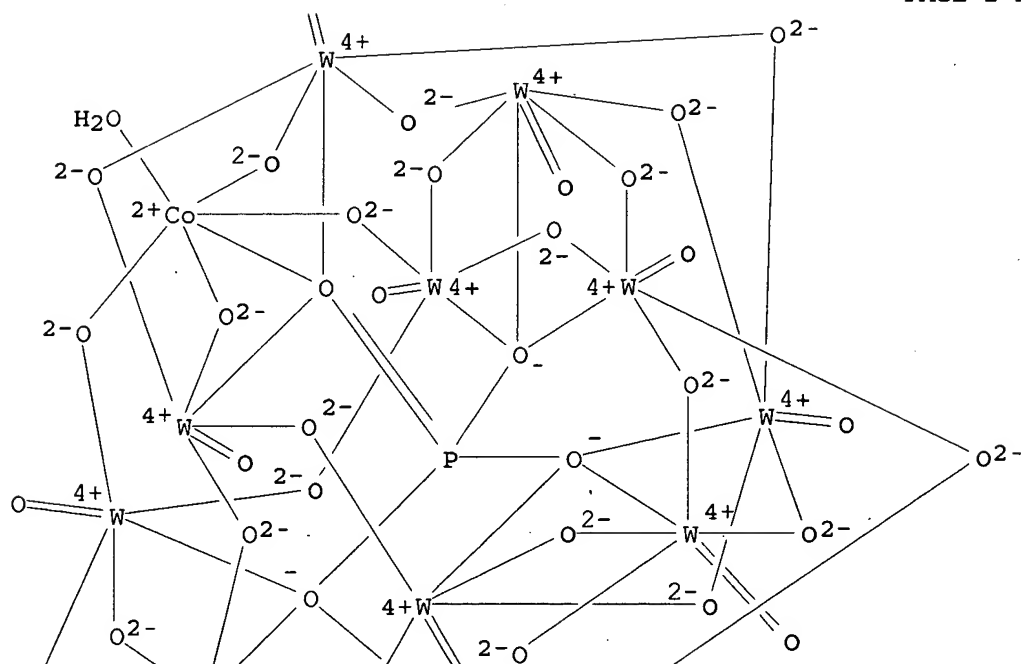
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PAGE 1-A



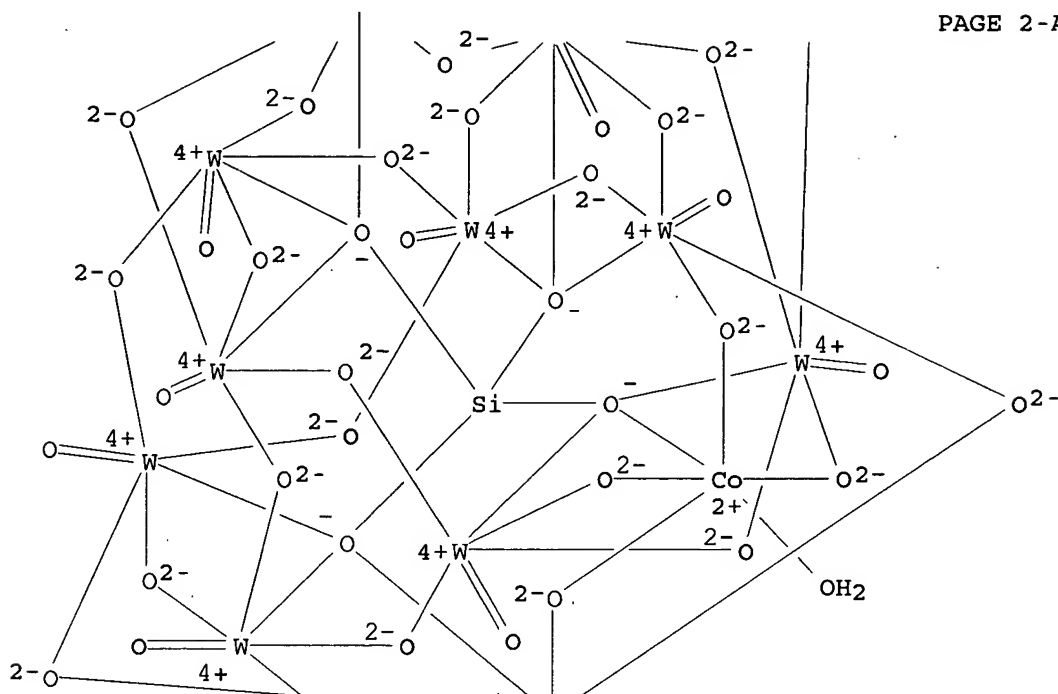
PAGE 2-A



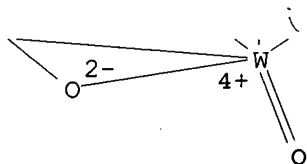




PAGE 2-A



PAGE 3-A



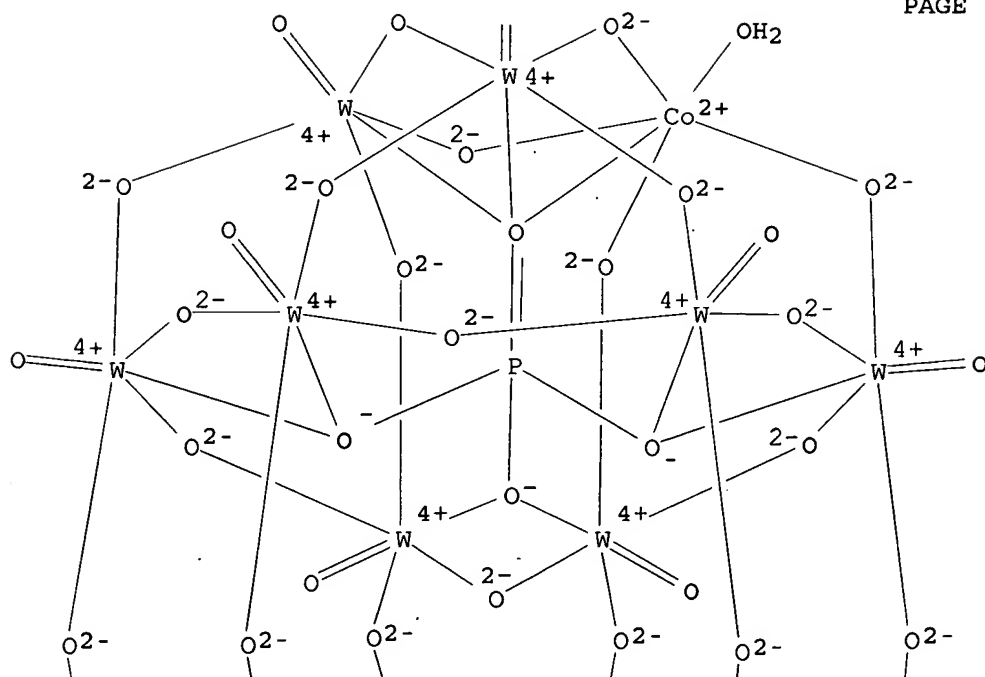
● 6 K<sup>+</sup>

RN	226422-95-3	HCAPLUS
CN	Tungstate(10-), bis(aquacobaltate)hexatriaconta-μ-oxohexadeca-oxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO':κO':κO':κO']]]hexadeca-, decapotassium (9CI) (CA INDEX NAME)	

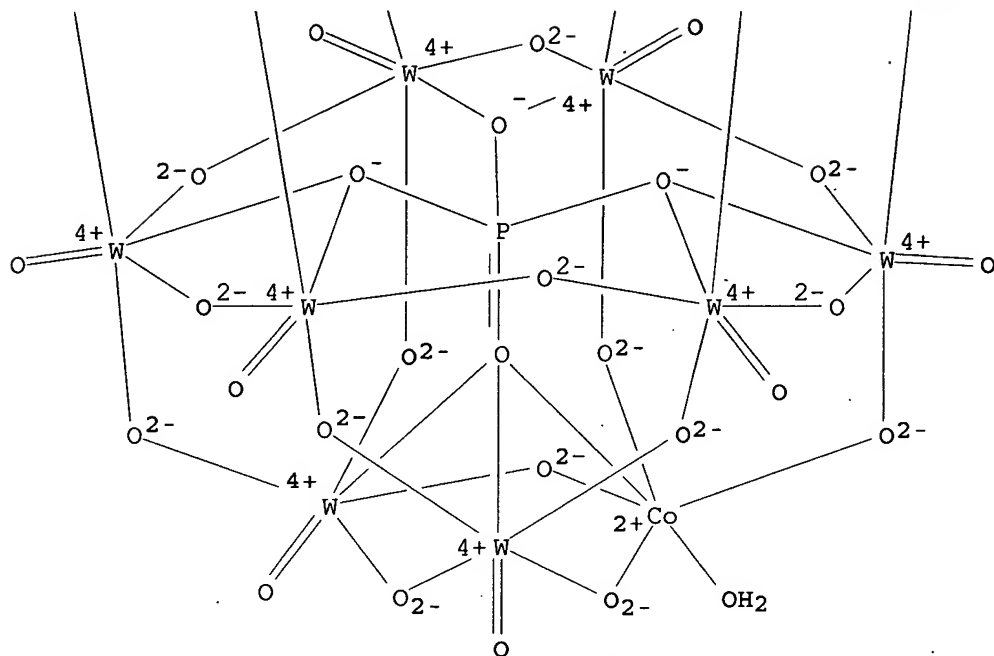
PAGE 1-A



PAGE 2-A



PAGE 3-A



PAGE 4-A

● 10 K<sup>+</sup>

```
RN      226422-97-5   HCAPLUS
CN      Ethanaminium, N,N-diethyl-N-methyl-, (aquacobaltate) tetracosam-
oxoundeca-oxo [μ12-[phosphato(3-)-κO:κO:κO:κO':..kappa.O':κO':κO'':κO'':κO'':κO'':κO'']undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)
```

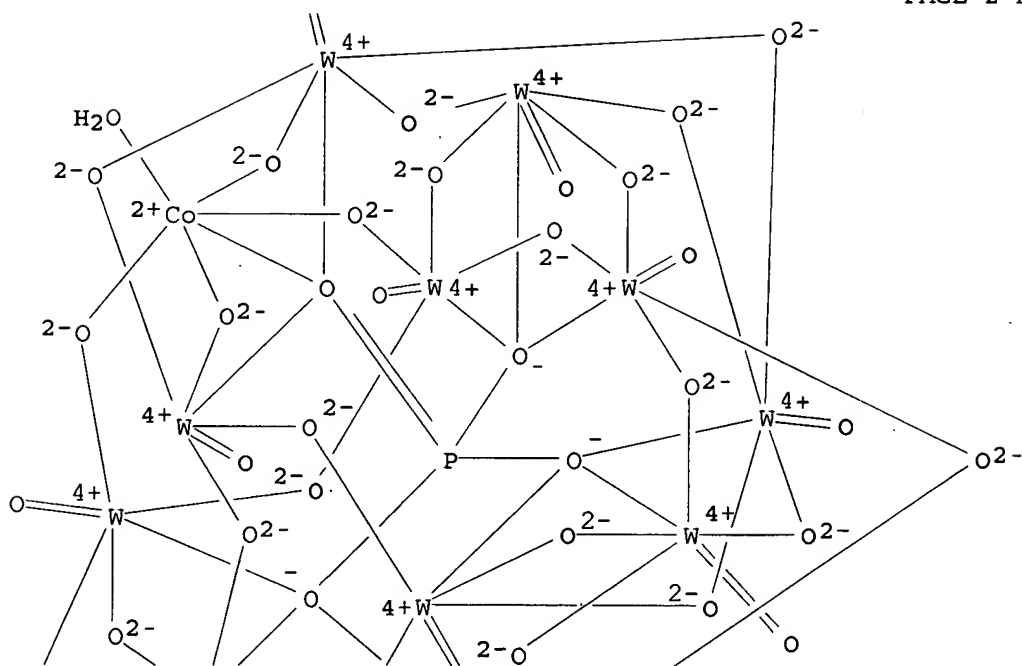
CM 1

CRN 66258-00-2  
CMF Co H2 O40 P W11  
CCI CCS

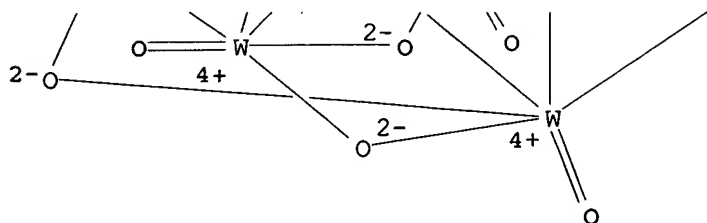
PAGE 1-A



PAGE 2-A



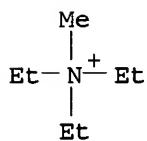
PAGE 3-A



CM 2

CRN 302-57-8

CMF C7 H18 N



RN 226422-98-6 HCAPLUS

CN 1-Propanaminium, N,N,N-tripropyl-, (aquacobaltate)tetracosam-  
 oxoundeca-oxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.k  
 appa.O':κO':κO':κO':κO':κO':κO':κO':  
 :κO']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 66258-00-2

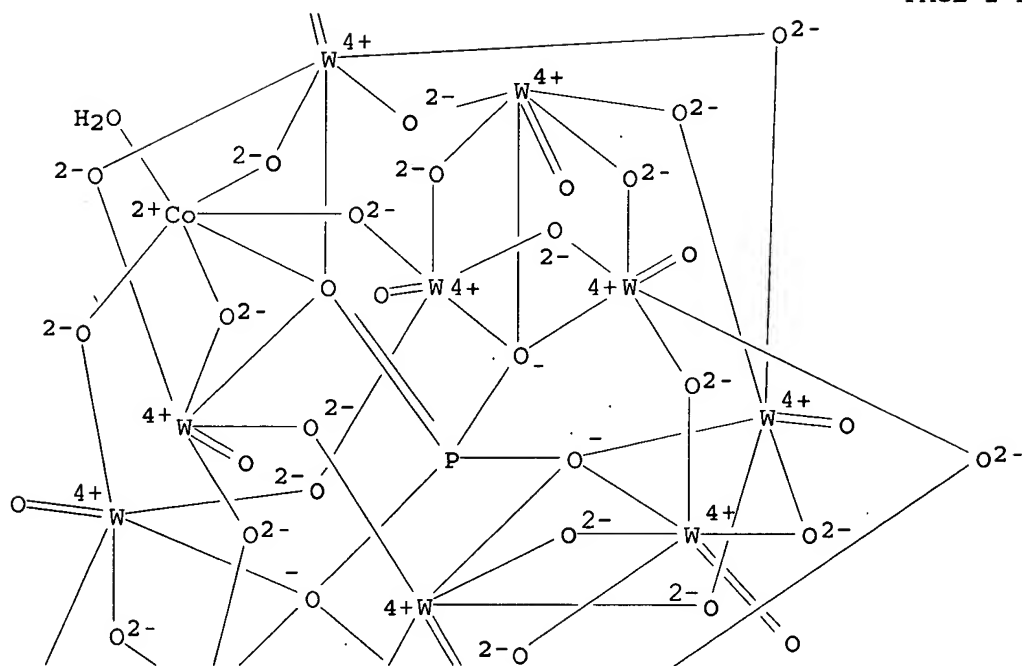
CMF Co H2 O40 P W11

CCI CCS

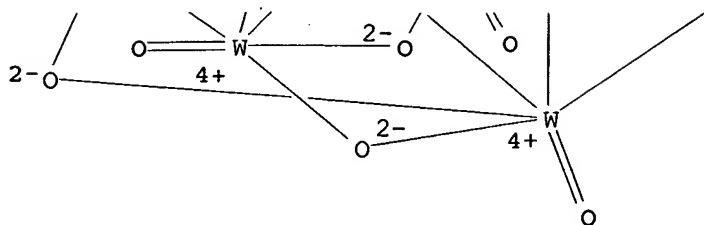
PAGE 1-A



PAGE 2-A

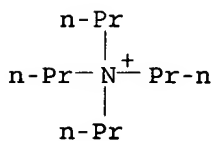


PAGE 3-A



CM 2

CRN 13010-31-6  
CMF C12 H28 N



RN 226422-99-7 HCAPLUS  
CN 1-Butanaminium, N,N,N-tributyl-, (aquacobaltate)tetracosam-  
oxoundeca-oxo[μ12-{phosphato(3-)-κO:κO:κO:κO':.k  
appa.O':κO':κO':κO':κO':κO':κO':κO':  
:κO':}]undecateungstate(5-) (5:1) (9CI) (CA INDEX NAME)

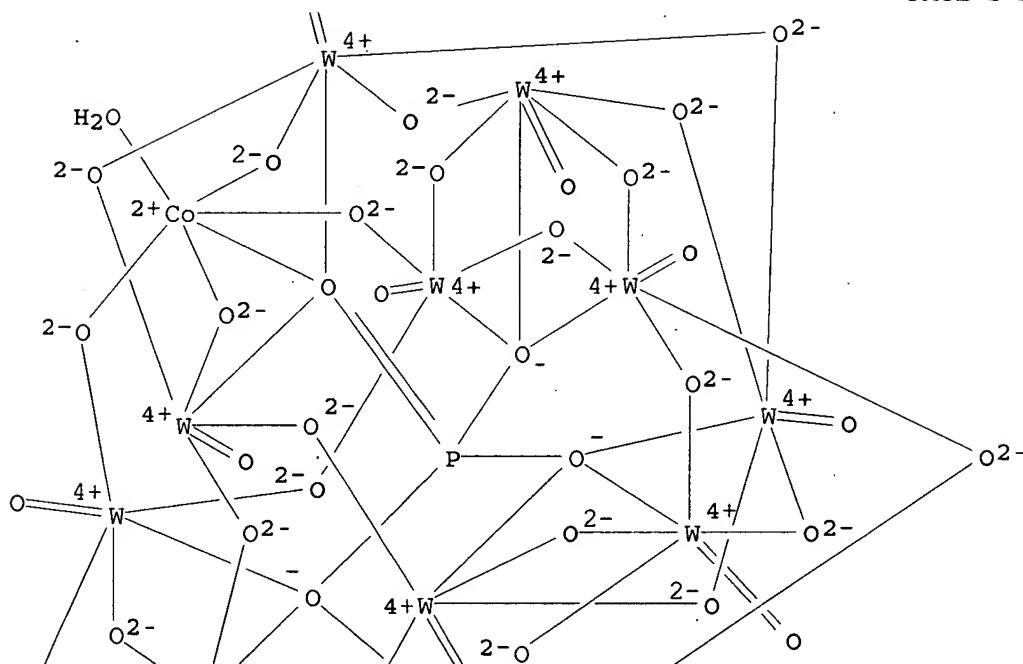
CM 1

CRN 66258-00-2  
CMF Co H2 O40 P W11  
CCI CCS

PAGE 1-A

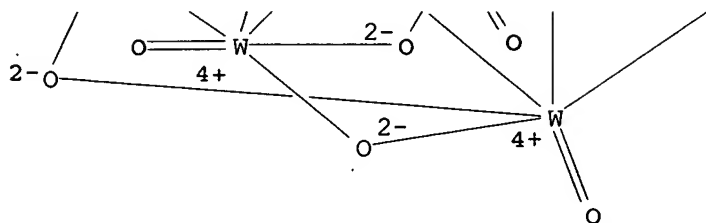


PAGE 2-A



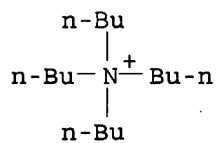


PAGE 3-A



CM 2

CRN 10549-76-5  
CMF C16 H36 N



RN 226423-00-3 HCAPLUS  
CN 1-Tetradecanaminium, N,N,N-trimethyl-, (aquacobaltate)tetracosam-  
oxoundeca-oxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.k  
appa.O':κO':κO':κO':κO':κO':κO':κO':  
:κO']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

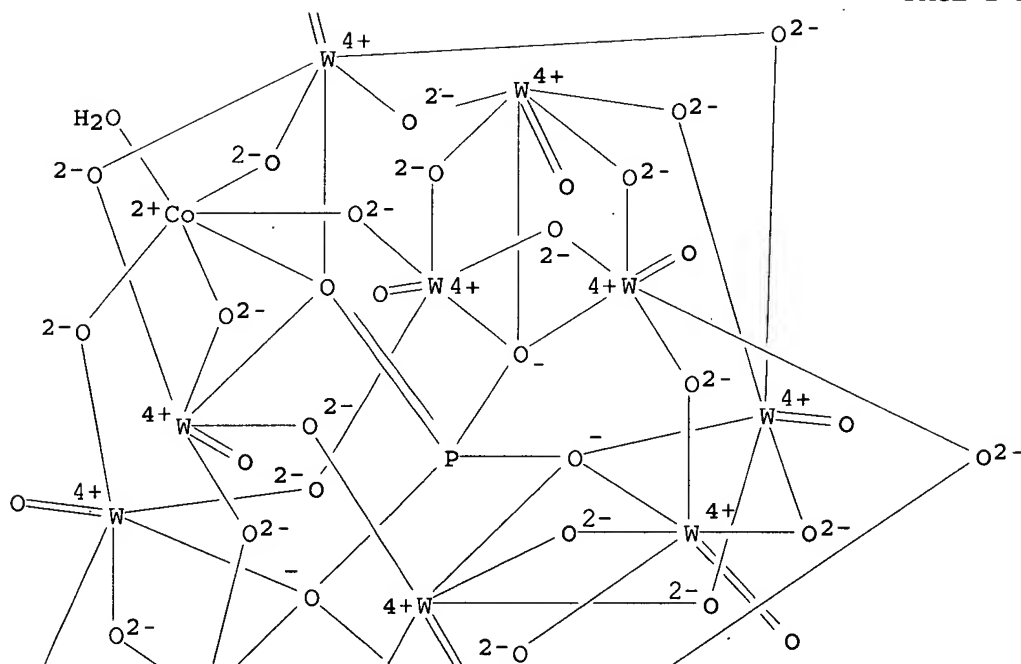
CM 1

CRN 66258-00-2  
CMF Co H2 O40 P W11  
CCI CCS

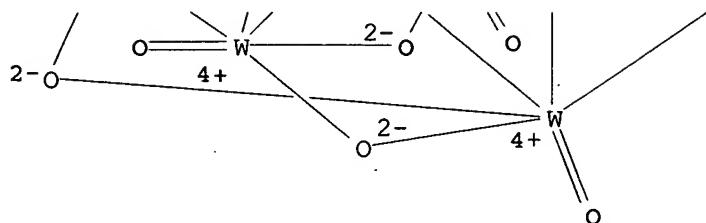
PAGE 1-A



PAGE 2-A



PAGE 3-A



CM 2

CRN 10182-92-0

CMF C17 H38 N

Me<sub>3</sub>N<sup>+</sup>-(CH<sub>2</sub>)<sub>13</sub>-Me

RE.CNT 2. THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 53 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:162734 HCAPLUS

DN 130:338418

TI Alumoxo-heteropoly compounds as weakly coordinating anions for  
metallocenes in the oligomerization of alkenes

AU Van Looveren, L. K. M.; Vankelecom, I. F. J.; De Vos, D. E.; Wouters, B.  
H. J.; Grobet, P. J.; Jacobs, P. A.

CS Departement Interfasechemie, Centrum voor Oppervlaktechemie en Katalyse,  
K.U. Leuven, Heverlee, B-3001, Belg.

SO Applied Catalysis, A: General (1999), 180(1-2), L5-L10

CODEN: ACAGE4; ISSN: 0926-860X

PB Elsevier Science B.V.

DT Journal

LA English

AB The in situ preparation of Me aluminoxane (MAO) on the crystalline structure of heteropoly acids generates a highly active and weakly coordinating compound for metallocene catalysts. The MAO-phase formed by the controlled hydrolysis of Me<sub>3</sub>Al covers the Keggin unit of the heteropoly compound. The primary Keggin structure of the heteropoly compound is preserved and MAO-formation induces an intensive charge transfer in the visible region. The <sup>27</sup>Al-NMR of alumoxo-phosphotungstate illustrates the reversible interaction of the Lewis acid Al of the anchored aluminoxane with the bridging O atoms of the phosphotungstate Keggin structure. The interaction of the alumoxo-heteropoly compound with an ansa-metallocene produces a highly active catalyst for the co-oligomerization of ethene and propene. The softness of the heteropoly compound combined with the pseudo-liquid phase formation of the alumoxo-heteropoly compds. exceeds the activity of the homogeneous system and the stability of the heterogeneous MAO-anchored materials. The composition of the Keggin structure det. the catalytic potential of the metallocene which is transformed in a temperature dependent oligomerization and a fluctuating alternation of monomer and comonomer. The mol. weight and the Me branching of the oligomer mols. are designing tools for the physicochem. features of a synthetic lubricants. A comparable charge delocalization over each heteropoly compound results in a single-sited catalytic system inducing a small

dispersity of oligomer products.

CC 35-3 (Chemistry of Synthetic High Polymers)

IT 1343-93-7, Phosphotungstic acid 12027-38-2,  
Silicotungstic acid 12636-72-5, Dimethylzirconocene 146814-57-5,  
(Dimethylsilylene)bis(indenyl)dimethylzirconium 204201-37-6

RL: CAT (Catalyst use); USES (Uses)

(alumoxo-heteropolyacid/metallocene catalysts for  
ethylene-propylene oligomerization)

IT 1343-93-7, Phosphotungstic acid 12027-38-2,  
Silicotungstic acid

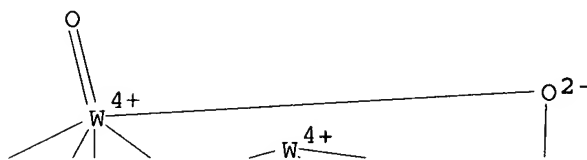
RL: CAT (Catalyst use); USES (Uses)

(alumoxo-heteropolyacid/metallocene catalysts for  
ethylene-propylene oligomerization)

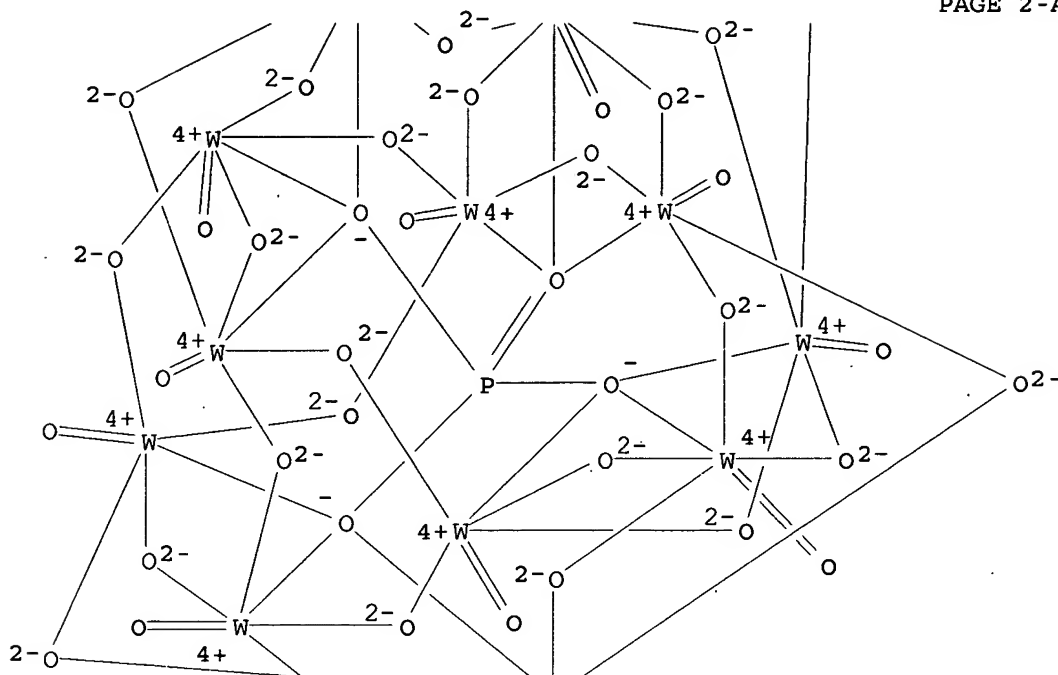
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':κappa  
.O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

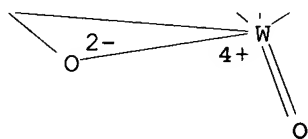
PAGE 1-A



PAGE 2-A



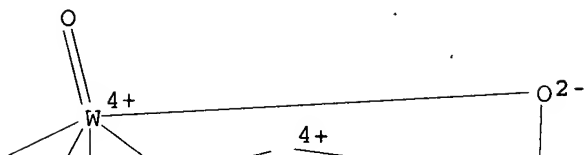
PAGE 3-A



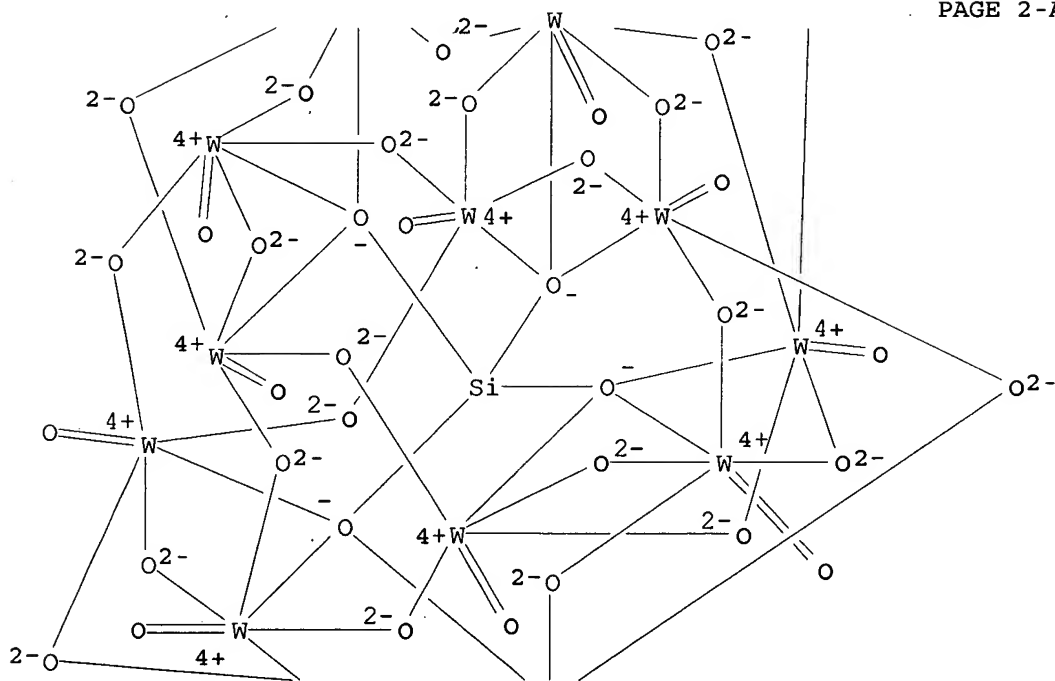
● 3 H<sup>+</sup>

```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O'':κO'']]tetracosα-μ-oxododecaoxododecα-, tetrahydrogen
(9CI)    (CA INDEX NAME)
```

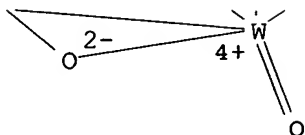
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 54 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:113624 HCAPLUS

DN 130:169813

TI Controlled oxidation of substituted hydrocarbons and heteropoly acid catalysts for use therein

IN Gubelmann-Bonneau, Michel; Poix-Davaine, Claire; Ponceblanc, Herve

PA Rhodia Chimie, Fr.

SO PCT Int. Appl., 33 pp.

CODEN: PIXXD2

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9906338	A1	19990211	WO 1998-FR1713	19980731 <--
	W:			AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, SL, TJ, TM, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	RW:			GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	FR 2766818	A1	19990205	FR 1997-9890	19970801 <--
	FR 2766818	B1	19990910		
	ZA 9806754	A	20000131	ZA 1998-6754	19980729 <--
	AU 9889864	A1	19990222	AU 1998-89864	19980731 <--
	EP 1003697	A1	20000531	EP 1998-941513	19980731 <--
	R:			AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI	
	JP 2001512089	T2	20010821	JP 2000-505103	19980731 <--
PRAI	FR 1997-9890	A	19970801	<--	
	WO 1998-FR1713	W	19980731	<--	

AB A substituted hydrocarbon substrate is contacted with a source of O in the presence of a catalyst having an active phase obtained from a heteropoly acid Hf[CcDdEeOx], in which C represents Mo and/or W, D represents P, As, Sb, Si, Ge, and/or B, and E represents V, optionally in combination with ≥1 metal of Group VB, VIIB, VIII or Cr, optionally by at least partial neutralization with a cation [AaBb] replacing Hf, in which A represents ≥1 monovalent cation and B represents VO<sub>2</sub><sup>+</sup>, VO<sub>3</sub><sup>+</sup>, an ion of an alkaline earth metal or of a metal of Group VIIB, VIII, IB, IVA and VA [c = 5-20, d = 1-5, e = 1-9, f = a + αb (α is the charge on B, namely 2-4), x being chosen to balance valences] and the substrate contains a CH<sub>2</sub> group bearing an electron-attracting group (especially CF<sub>3</sub>) or atom. Thus, passing a mixture of MeCF<sub>3</sub> 15.6, O<sub>2</sub> 15.6, H<sub>2</sub>O 7.8, He 55.9, and

N2 5.1 mol% over (VO)HPW12O40 at 225° resulted in 22.0% conversion of MeCF3 with 95.7% selectivity to CF3CH2OCH2CF3. By varying the temperature and catalyst composition selectivity to CF3CO2H or CF3CO2CH2CF3 could be obtained.

IC ICM C07B033-00  
ICS B01J027-188; B01J027-199; C07C053-18; C07C069-63; C07C043-12; C07C051-215; C07C067-39; C07C041-01

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 67

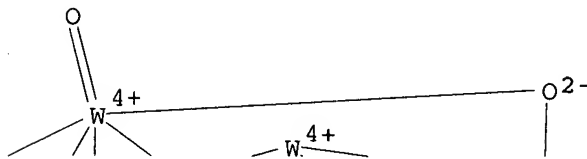
IT 1343-93-7 12293-15-1 12786-62-8 160172-48-5  
167268-54-4 220412-34-0  
RL: CAT (Catalyst use); USES (Uses)  
(controlled oxidation of substituted hydrocarbons by use of heteropoly acid catalysts)

IT 1343-93-7 12293-15-1 12786-62-8  
RL: CAT (Catalyst use); USES (Uses)  
(controlled oxidation of substituted hydrocarbons by use of heteropoly acid catalysts)

RN 1343-93-7 HCAPLUS

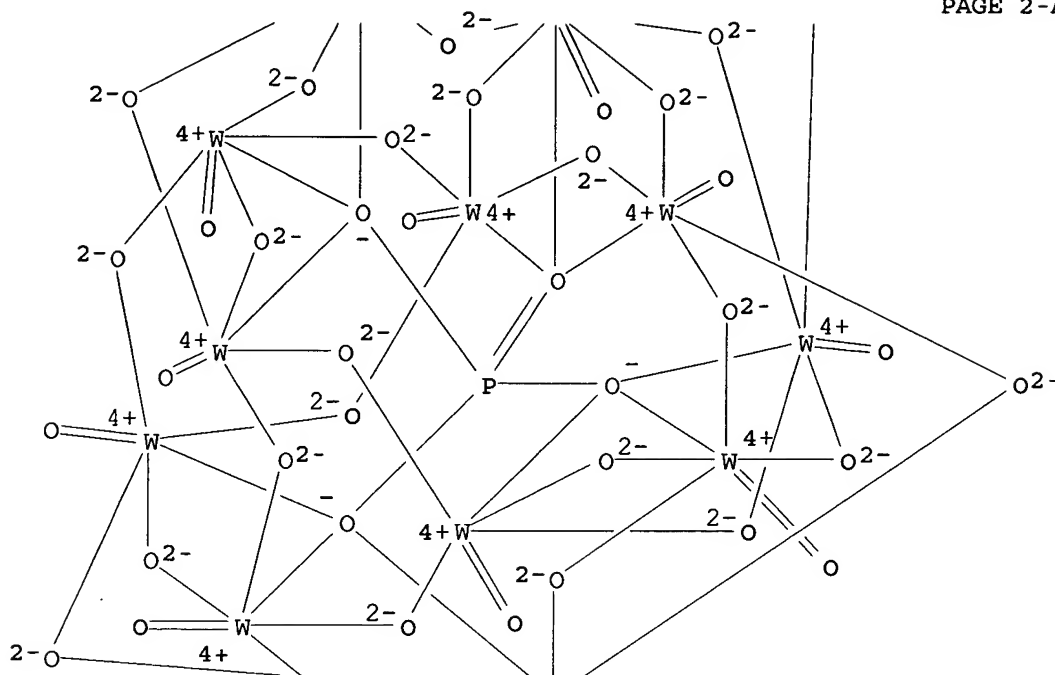
CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

PAGE 1-A

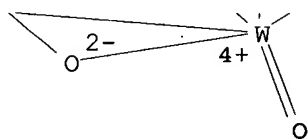




PAGE 2-A



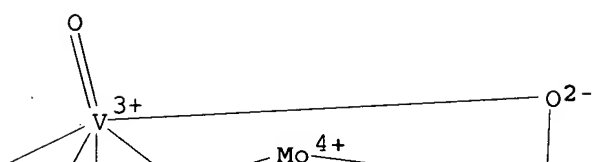
PAGE 3-A



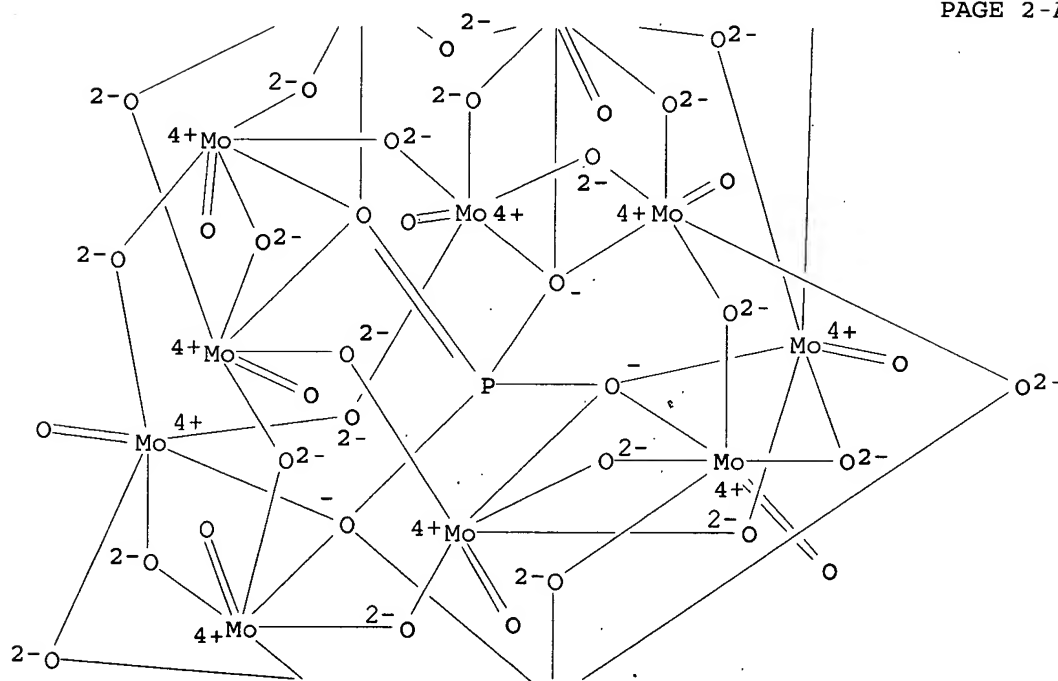
● 3 H<sup>+</sup>

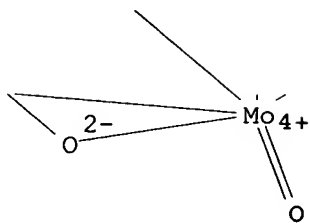
```
RN      12293-15-1   HCAPLUS
CN      Vanadate(4-), (eicosa-μ-oxoundecaοxoundecamolybdate)tetra-μ-
        oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
        ':κO':κO'':κO'':κO'':κO'':κO'':κO'':κapp
        a.O'']]-, tetrahydrogen (9CI) (CA INDEX NAME)
```

PAGE 1-A



PAGE 2-A



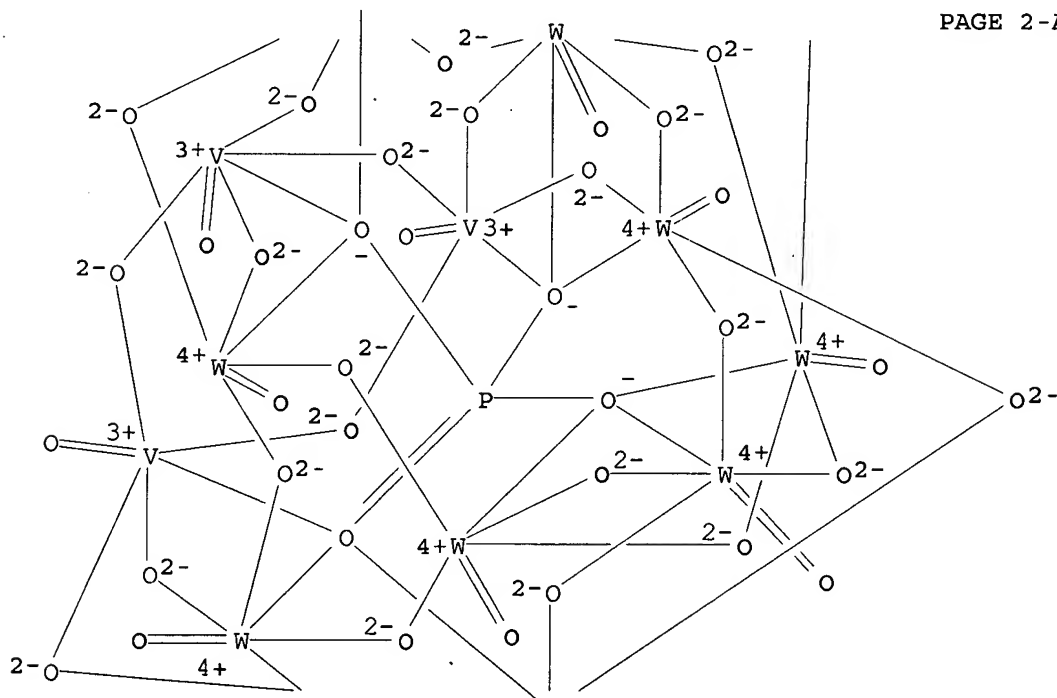


PAGE 3-A

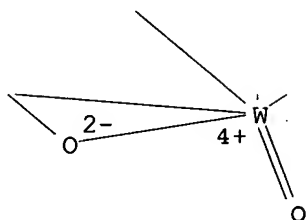
●<sub>4</sub> H<sup>+</sup>

RN 12786-62-8 HCAPLUS  
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxonona-oxononatungstate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'':κO'':κO'':]]tri-, hexahydrogen(9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



PAGE 3-A

● 6 H<sup>+</sup>

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 55 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1999:111091 HCAPLUS  
DN 130:290553  
TI Synthesis and surface acidic property of hydrotalcite-like compounds and their heteropolyanion intercalates  
AU Guo, Jun; Jiang, Dazhen; Min, Enze  
CS Department of Chemistry, Xiangtan Normal University, Xiangtan, 411100, Peop. Rep. China  
SO Huaxue Yanjiu Yu Yingyong (1998), 10(6), 610-616  
CODEN: HYYIFM; ISSN: 1004-1656  
PB Huaxue Yanjiu Yu Yingyong Bianjibu  
DT Journal  
LA Chinese  
AB Pillared intercalation compds. of M<sub>2</sub>Al(OH)<sub>6</sub>NO<sub>3</sub> (M = Mg, Zn) hydrotalcite-like compds. (HTLs) with transition metal substituted polyoxometalates were synthesized and characterized by XRD, IR, and elemental analyses. For example, SiW<sub>11</sub>Co-Zn<sub>2</sub>Al was synthesized by mixing hydrotalcite Zn<sub>2</sub>Al(OH)<sub>6</sub>NO<sub>3</sub> with H<sub>2</sub>O, dripping in K<sub>6</sub>SiW<sub>11</sub>CoO<sub>39</sub>, stirring at 85° and pH 6.5 for 3-4 h, and drying at 80°. The surface acidic properties and acidic types of the synthesized products were studied by NH<sub>3</sub>-TPD and Py-IR methods, and the acid-base catalytic behaviors were examined over isopropanol conversions. There are 2 types of active sites (acid and base) on the surface of the HTLs, and their relative strength are related to the types of the anion pillars. The acidic strength increased slightly and the B-acidic sites were produced with the polyoxometalate intercalating into the HTLs layers.  
CC 78-3 (Inorganic Chemicals and Reactions)  
Section cross-reference(s): 45, 67  
IT 69048-26-6 128423-19-8, Aluminum zinc hydroxide **nitrate** (AlZn<sub>2</sub>(OH)<sub>6</sub>NO<sub>3</sub>)  
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
(catalyst for isopropanol dehydrogenation and intercalation reaction with polyoxometalates)  
IT 69048-26-6DP, pillared intercalation product with transition metal substituted tungstosilicate heteropoly acids 128423-19-8DP, Aluminum zinc hydroxide **nitrate** (AlZn<sub>2</sub>(OH)<sub>6</sub>NO<sub>3</sub>), pillared intercalation product with transition metal substituted tungstosilicate heteropoly acids  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation and catalyst for isopropanol dehydrogenation)  
IT 37308-25-1DP, pillared intercalation product with

aluminum-magnesium and -zinc hydroxides 56367-34-1DP, pillared  
intercalation product with aluminum-magnesium and -zinc hydroxides  
149275-00-3DP, pillared intercalation product with  
aluminum-magnesium and -zinc hydroxides 158702-58-0DP, pillared  
intercalation product with aluminum-magnesium and -zinc hydroxides  
158702-59-1DP, pillared intercalation product with  
aluminum-magnesium and -zinc hydroxides 158702-60-4DP, pillared  
intercalation product with aluminum-magnesium and -zinc hydroxides  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

(preparation and catalytic activity for isopropanol dehydrogenation of  
aluminum-magnesium and -zinc hydroxide pillared intercalation compds.  
with polyoxometalates)

IT 37308-25-1DP, pillared intercalation product with  
aluminum-magnesium and -zinc hydroxides 56367-34-1DP, pillared  
intercalation product with aluminum-magnesium and -zinc hydroxides  
149275-00-3DP, pillared intercalation product with  
aluminum-magnesium and -zinc hydroxides 158702-58-0DP, pillared  
intercalation product with aluminum-magnesium and -zinc hydroxides  
158702-59-1DP, pillared intercalation product with  
aluminum-magnesium and -zinc hydroxides 158702-60-4DP, pillared  
intercalation product with aluminum-magnesium and -zinc hydroxides  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

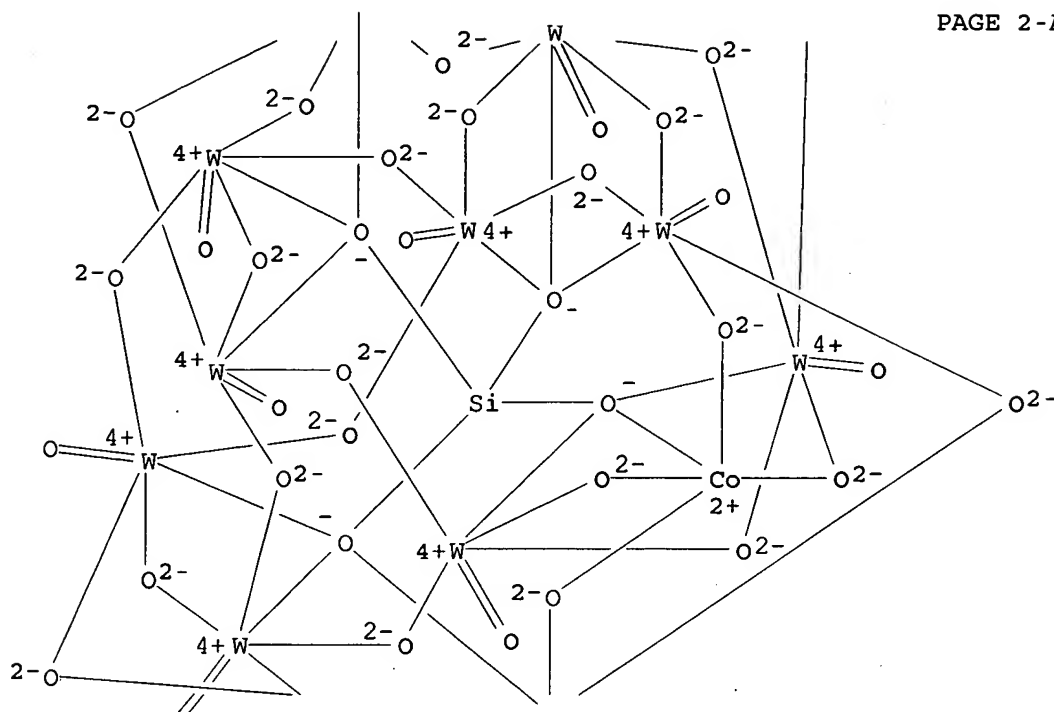
(preparation and catalytic activity for isopropanol dehydrogenation of  
aluminum-magnesium and -zinc hydroxide pillared intercalation compds.  
with polyoxometalates)

RN 37308-25-1 HCAPLUS

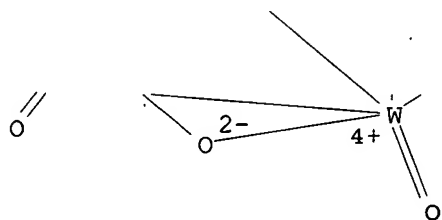
CN Tungstate(6-), cobaltate[μ12-[orthosilicato(4-)-  
κO:κO:κO:κO':κO':κO':κO'':.kappa  
.O':κO':κO':κO':κO':κO'']]tetracosa-μ-  
oxoundeca-oxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A

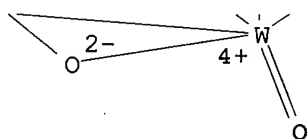
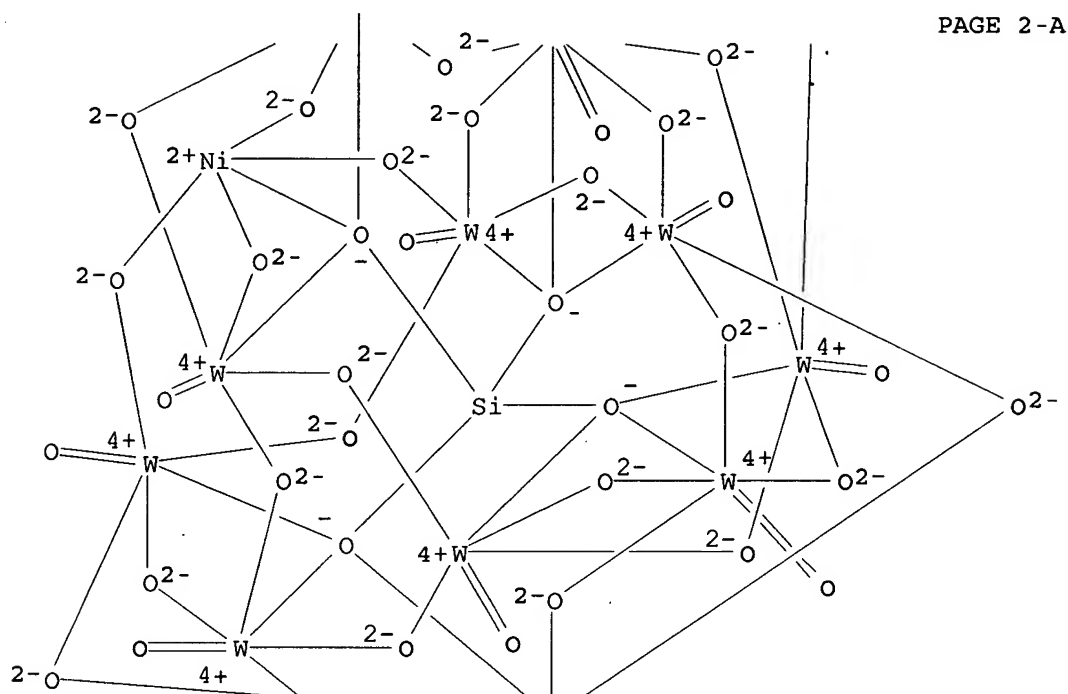


PAGE 3-A

● 6 K<sup>+</sup>

RN 56367-34-1 HCAPLUS  
 CN Tungstate(6-), nickelate[μ12-[orthosilicato(4-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O'':κO'':κO'':κO'':κO'']]tetracosa-μ-  
 oxoundeca-oxaundeca-, hexapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

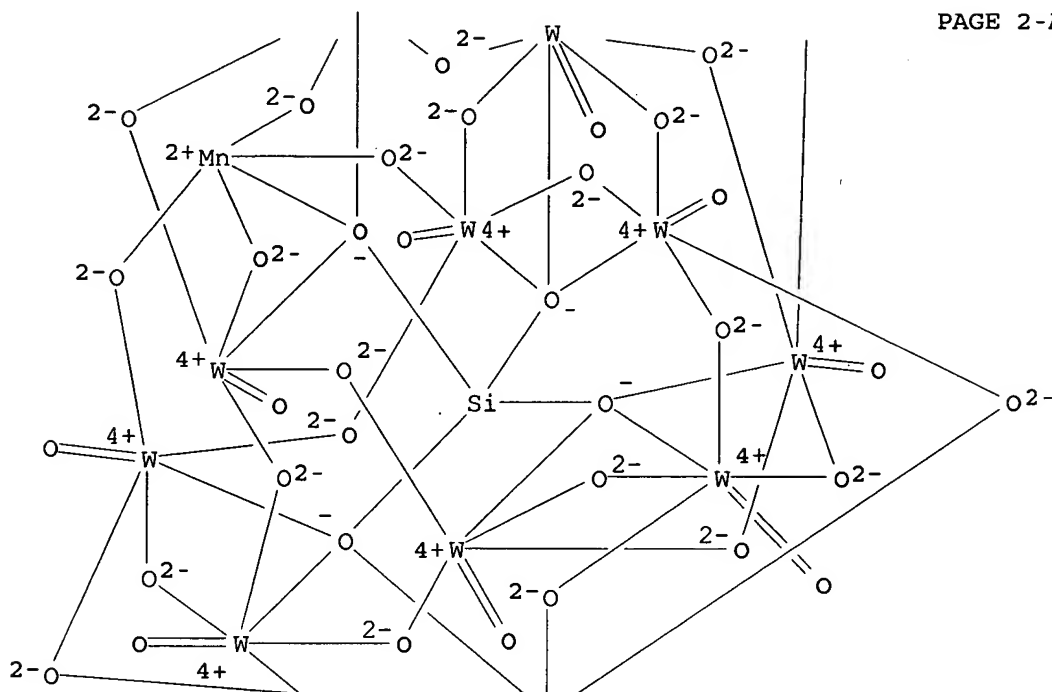


●6 K<sup>+</sup>

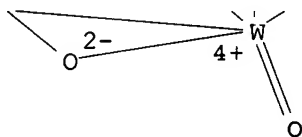
RN 149275-00-3 HCAPLUS  
 CN Tungstate(6-), manganate[μ12-[orthosilicato(4-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]tetracosa-μ-  
 oxoundeca-oxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



PAGE 3-A



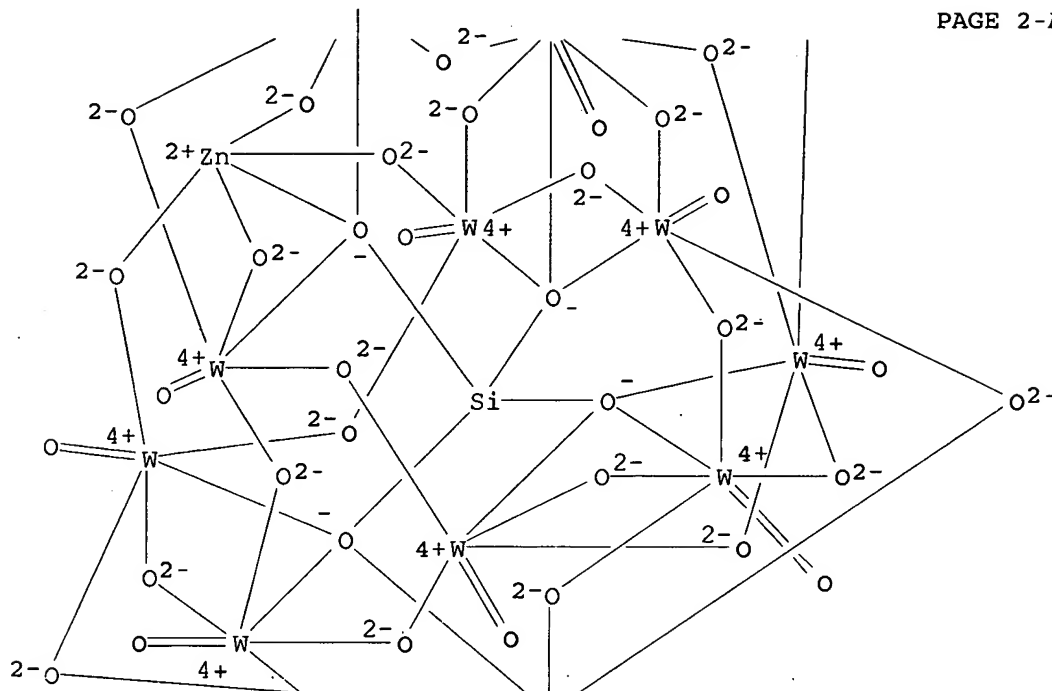
● 6 K<sup>+</sup>

```
RN      158702-58-0   HCAPLUS
CN      Tungstate(6-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O''':κO'':κO'':κO'':κO'':κO'':κO'':.kap
pa.O''':κO'']]tetracosα-μ-oxoundecaοxozincateundeca-,
hexapotassium(9CI)    (CA INDEX NAME)
```

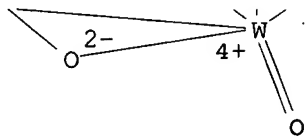
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 2-A



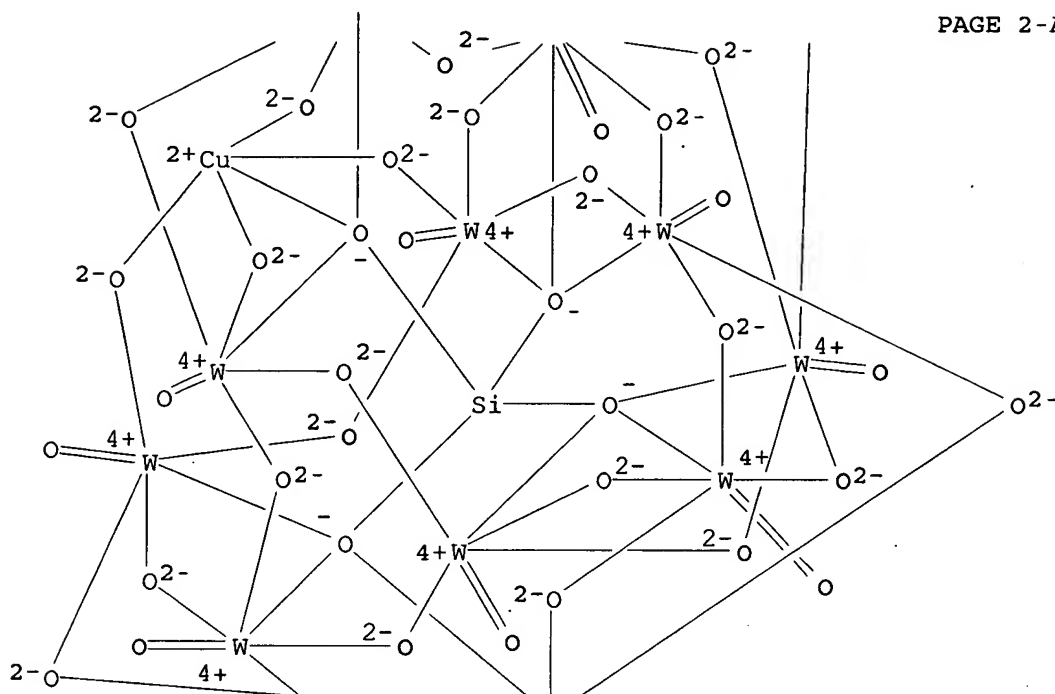
PAGE 3-A

● 6 K<sup>+</sup>

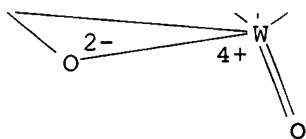
RN 158702-59-1 HCAPLUS  
 CN Tungstate(6-), cuprate[μ12-[orthosilicato(4-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]tetracosa-μ-  
 oxoundeca-oxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A

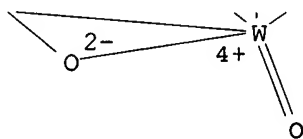
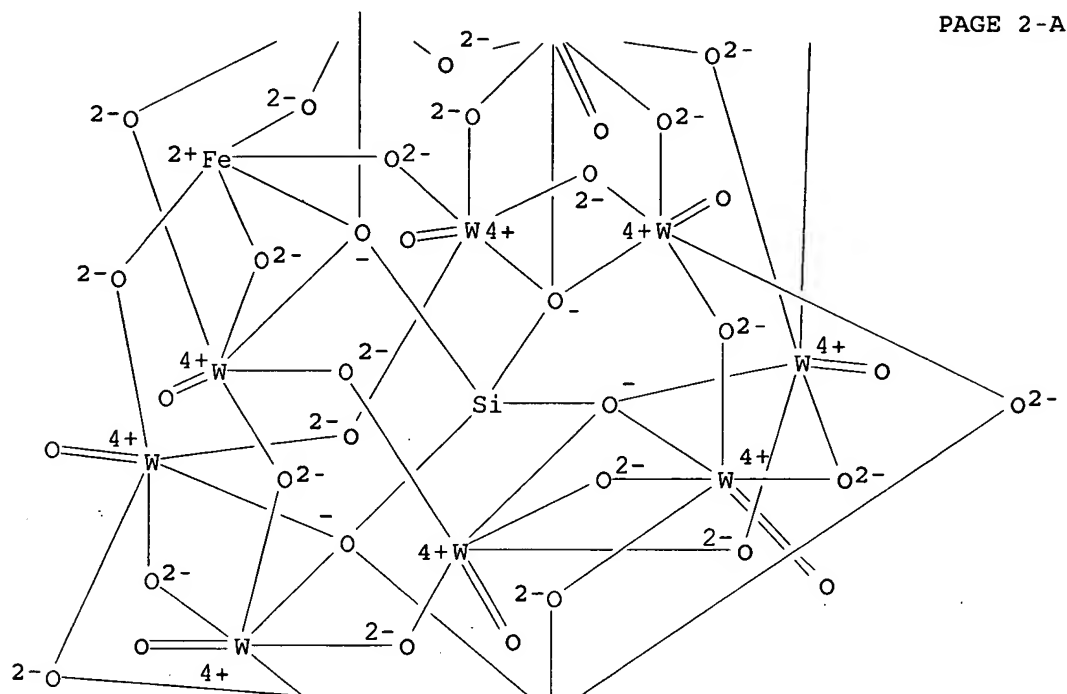


PAGE 3-A

● 6 K<sup>+</sup>

RN 158702-60-4 HCAPLUS  
 CN Tungstate(6-), ferrate[μ12-[orthosilicato(4-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]tetracosa-μ-  
 oxoundeca-oxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

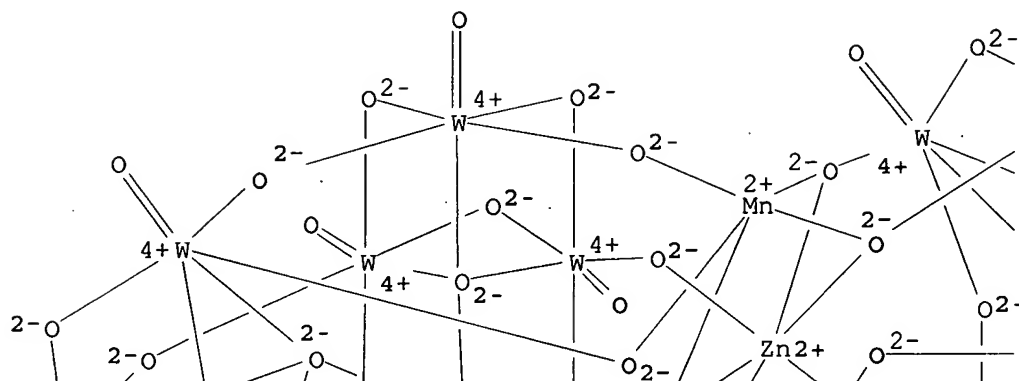


● 6 K<sup>+</sup>

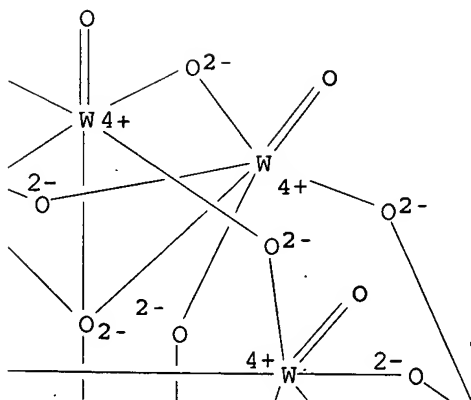
L32 ANSWER 56 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1998:6683 HCAPLUS  
 DN 128:101848  
 TI Oxidation of 1,3-dimethyladamantane by hydrogen peroxide in the presence  
 of lacunar-type polyoxometalates  
 AU Karaulova, E. N.; Zaikin, V. G.; Bagrii, E. I.  
 CS Russia  
 SO Neftekhimiya (1997), 37(5), 396-401  
 CODEN: NEFTAH; ISSN: 0028-2421  
 PB Nauka  
 DT Journal  
 LA Russian  
 AB Lacuna-type polyoxometalates  $\text{RMX}(\text{H}_2\text{O})\text{W}_{11}\text{O}_{39}$  ( $\text{M} = \text{Fe}, \text{Co}, \text{Cu}, \text{Mn}$ ;  $\text{X} = \text{Si}, \text{P}$ ;  $\text{R} = 1\text{-hexadecylpyridinium}$ ) were prepared and used to catalyze the title reaction. When  $\text{X} = \text{Si}$  and  $\text{M} = \text{Fe}$  or  $\text{Mn}$ , oxidation occurred only at the tertiary C atom. The most effective catalyst for oxidation of the secondary

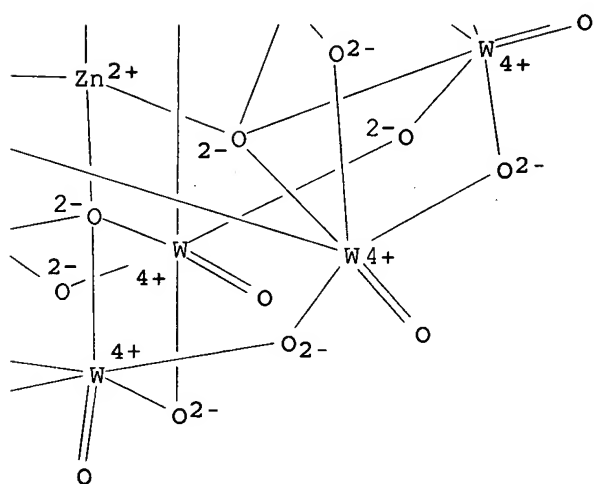
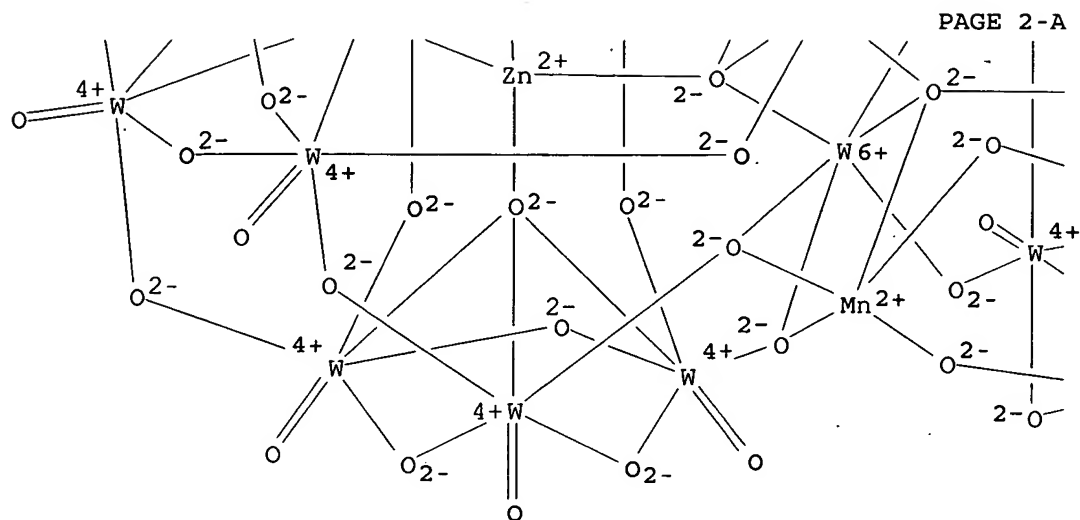
C atom contained Fe and P.  
CC 24-8 (Alicyclic Compounds)  
IT 158093-21-1P 201421-74-1P 201421-75-2P  
201421-76-3P 201421-77-4P 201421-78-5P  
201421-79-6P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of  
lacuna-type polyoxometalates)  
IT 123-03-5, Pyridinium, 1-hexadecyl-, chloride 702-79-4,  
1,3-Dimethyladamantane 1333-82-0, Chromic anhydride 6834-92-0,  
Disodium silicate 7722-84-1, Hydrogen peroxide, reactions 7785-87-7,  
Manganese sulfate 10421-48-4, Ferric nitrate  
13472-45-2, Sodium tungstate 37300-94-0 105785-76-0 133520-22-6  
133854-52-1, Manganese sodium tungsten zinc oxide (Mn<sub>2</sub>Na<sub>12</sub>W<sub>19</sub>Zn<sub>3</sub>O<sub>68</sub>)  
135266-66-9  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of  
lacuna-type polyoxometalates)  
IT 201421-74-1P 201421-75-2P 201421-76-3P  
201421-77-4P 201421-78-5P 201421-79-6P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of  
lacuna-type polyoxometalates)  
RN 201421-74-1 HCAPLUS  
CN Pyridinium, 1-hexadecyl-, dimanganateoctatriaconta- $\mu$ -oxotetra- $\mu$ 3-  
oxoocta- $\mu$ 4-oxooctadeca-oxotrizincatenonadecatungstate(12-) (12:1) (9CI)  
(CA INDEX NAME)  
  
CM 1  
  
CRN 168755-42-8  
CMF Mn<sub>2</sub> O<sub>68</sub> W<sub>19</sub> Zn<sub>3</sub>  
CCI CCS

PAGE 1-A



PAGE 1-B

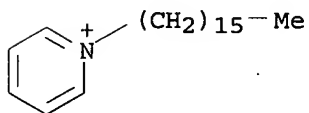




CM 2

CRN 7773-52-6

CMF C21 H38 N



RN 201421-75-2 HCAPLUS

CN Pyridinium, 1-hexadecyl-, (aquamanganate) [μ<sub>12</sub>-[orthosilicato(4-)-  
κO:κO:κO:κO':κO':κO':κO'':κappa  
.O':κO':κO':κO':κO'']] tetracosam-

oxoundeca oxoundecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 53663-95-9

CMF H2 Mn O40 Si W11

CCI CCS

PAGE 1-A

0  
||





CM 1

CRN 53663-94-8

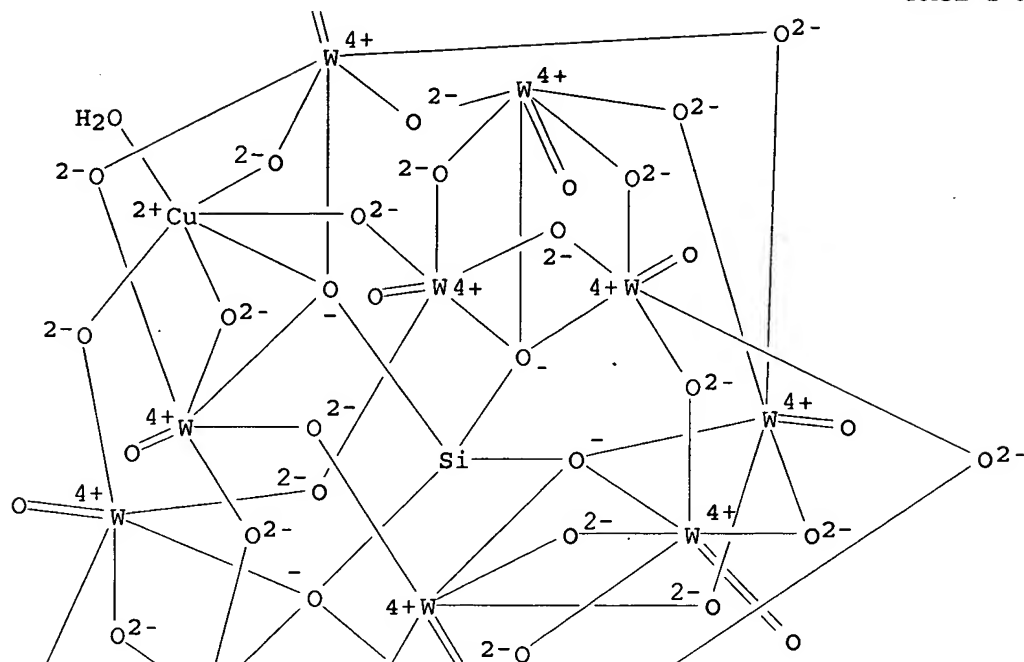
CMF Cu H2 O40 Si W11

CCI CCS

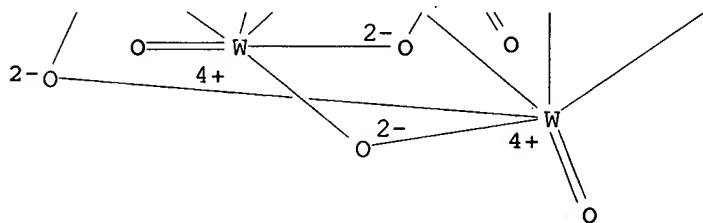
PAGE 1-A

0

PAGE 2-A



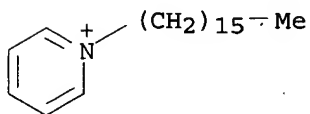
PAGE 3-A



CM 2

CRN 7773-52-6

CMF C21 H38 N



RN 201421-77-4 HCAPLUS

CN Pyridinium, 1-hexadecyl-, (aquacobaltate) [ $\mu$ 12-[orthosilicato(4)-  
κO:κO:κO:κO':κO':κO':κO'':.kappa  
.O':κO':κO'':κO'':κO'']tetracosam-  
oxoundeca-oxoundecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

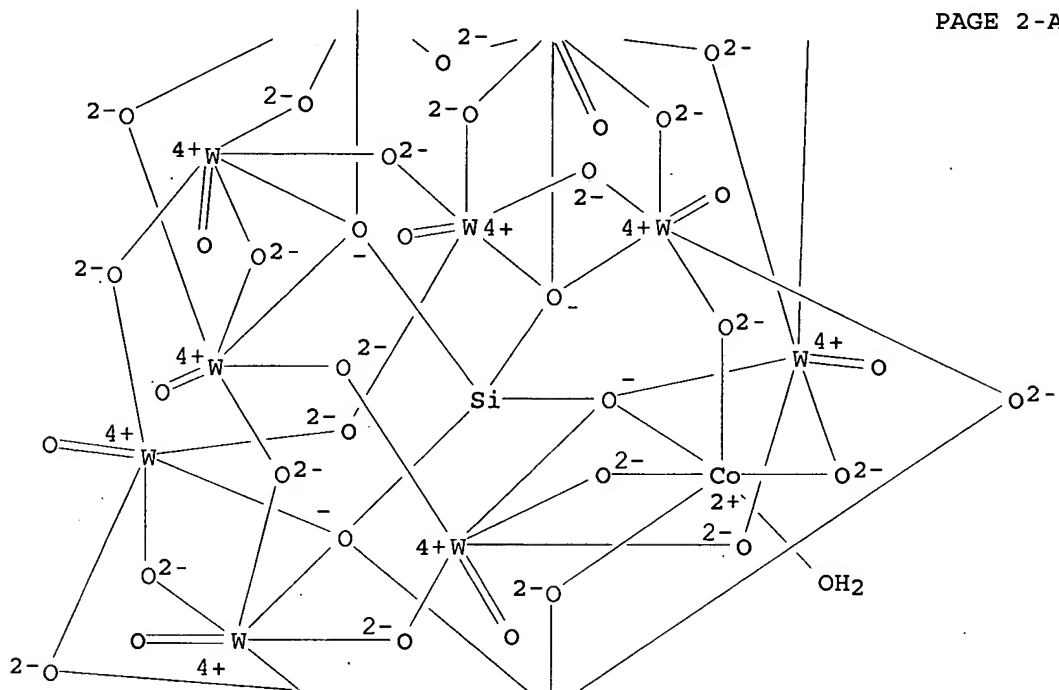
CM 1

CRN 12516-12-0

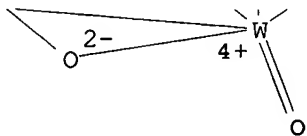
CMF Co H2 O40 Si W11

CCI CCS

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



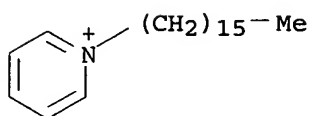
PAGE 3-A



CM 2

CRN 7773-52-6

CMF C21 H38 N



RN 201421-78-5 HCAPLUS  
 CN Pyridinium, 1-hexadecyl-, (aquaferate) [μ<sub>12</sub>-[orthosilicato(4-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]tetracosa-μ-  
 oxoundeca-oxoundecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 39449-49-5

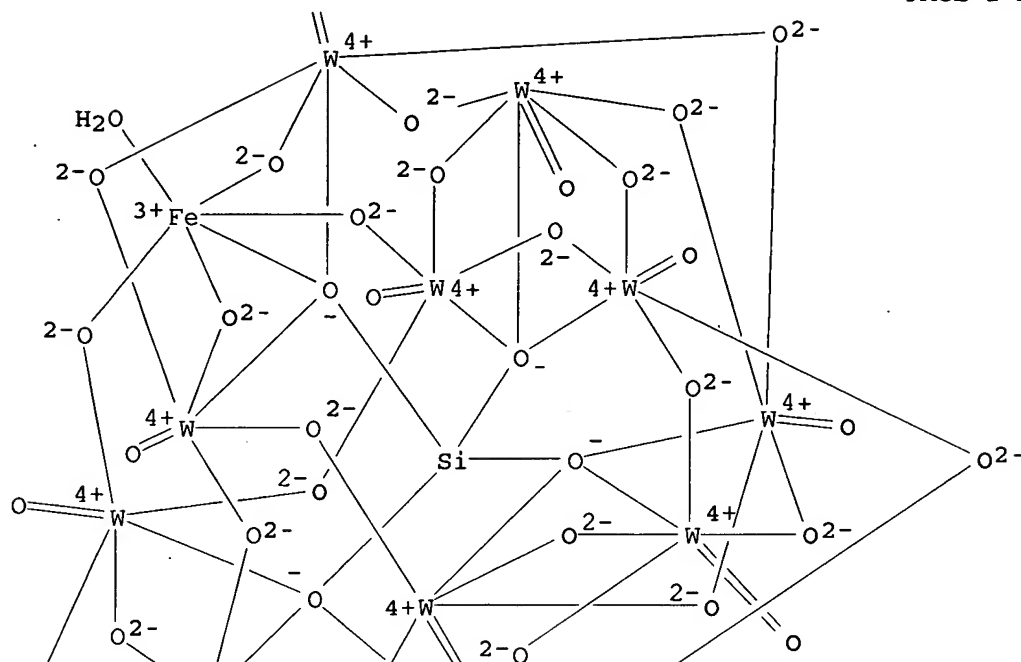
CMF Fe H2 O40 Si W11

CCI CCS

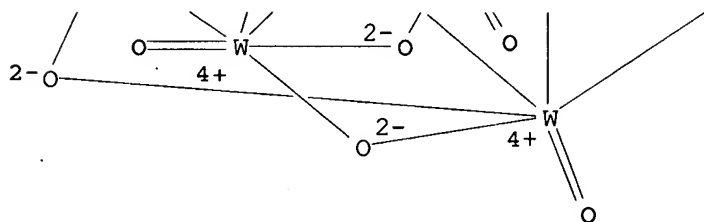
PAGE 1-A

O

PAGE 2-A

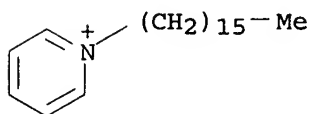


PAGE 3-A



CM 2

CRN 7773-52-6  
CMF C21 H38 N



RN 201421-79-6 HCAPLUS  
CN Pyridinium, 1-hexadecyl-, (aquaferate)tetracosam-oxoundeca-oxo[μ12-  
[phosphato(3-)-κO:κO:κO:κO':κO':κO':.k  
appa.O':κO':κO':κO':κO':κO']undeca  
tungstate(4-) (4:1) (9CI) (CA INDEX NAME)

CM 1

CRN 94772-22-2

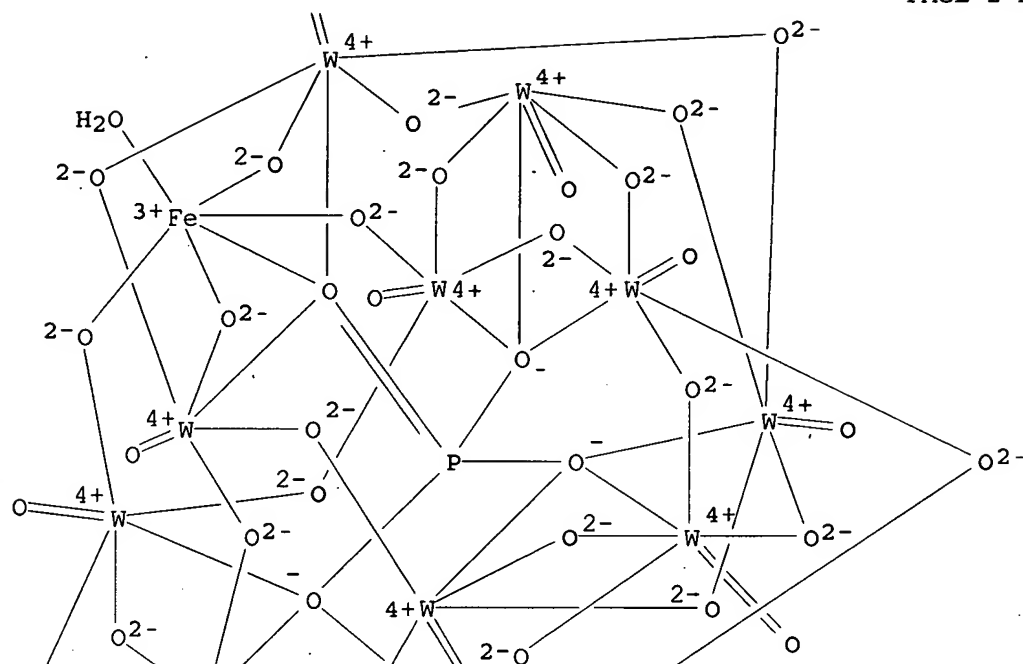
CMF Fe H2 O40 P W11

CCI CCS

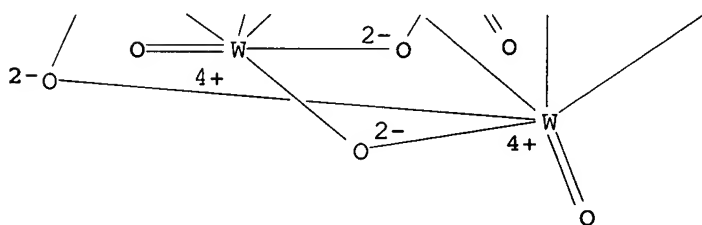
PAGE 1-A

0

PAGE 2-A



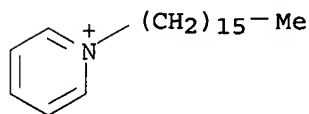
PAGE 3-A



CM 2

CRN 7773-52-6

CMF C21 H38 N



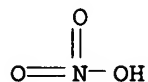
IT 10421-48-4, Ferric nitrate

RL: RCT (Reactant); RACT (Reactant or reagent)

(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of lacuna-type polyoxometalates)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

L32 ANSWER 57 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1997:576007 HCAPLUS

DN 127:252303

TI The sorption and reaction of NO and NO2 on metal-oxygen-cluster compounds (heteropoly oxometalates)

AU Belanger, R.; Moffat, J. B.

CS Department of Chemistry, Guelph-Waterloo Centre for Graduate Work in Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1, Can.

SO Environmental Research Forum (1996), 1-2 (Chemistry and Energy), 63-76

CODEN: ERFOFX; ISSN: 1421-0274

PB Transtec

DT Journal

LA English

AB Substantial quantities of NO2 are removed from the gas phase by either 12-tungstophosphoric acid (HPW) or 12-tungstosilicic acid (HSiW). Part of the NO2 is converted to HNO3 which is desorbed, while the remainder is retained on the catalyst. 12-Molybdophosphoric acid (HPMo) sorbs relatively small quantities of NO2, and the aforementioned processes observed with the more acidic HPW and HSiW do not occur to any appreciable extent with HPMo. The quantity of NO2 retained on HPW or HSiW at 150° corresponds, at least approx., to the total number of protons on and in the solid. At 500-600°, the aforementioned process is reversed and NO2 is desorbed from the catalyst. Although NO is not sorbed on any of the heteropoly acids studied, after prior sorption of NO2 on HPW and HSiW significant quantities of NO are sorbed. The previously sorbed NO2 facilitates the formation of N2O3 on addition of NO. NO2 which is retained on the catalyst apparently assoc. with H+ as HNO2+.

CC 59-4 (Air Pollution and Industrial Hygiene)

IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2, 12-Molybdophosphoric acid 12027-38-2, 12-Tungstosilicic acid

RL: CAT (Catalyst use); USES (Uses)

(sorption and reaction of NO and NO2 on metal-oxygen-cluster compds. (heteropoly oxometalates))

IT 1343-93-7, 12-Tungstophosphoric acid 12026-57-2, 12-Molybdophosphoric acid 12027-38-2, 12-Tungstosilicic acid

RL: CAT (Catalyst use); USES (Uses)

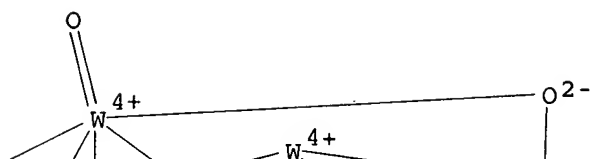
(sorption and reaction of NO and NO2 on metal-oxygen-cluster compds. (heteropoly oxometalates))

RN 1343-93-7 HCAPLUS

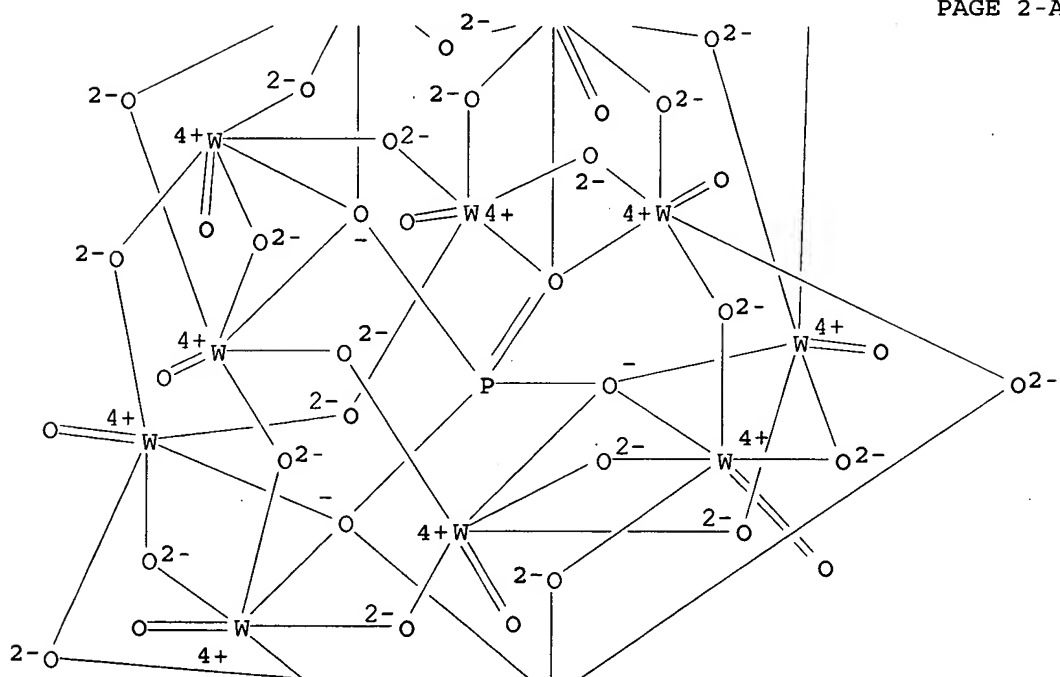
CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)



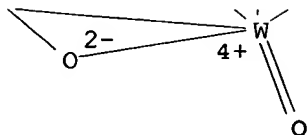
PAGE 1-A



PAGE 2-A

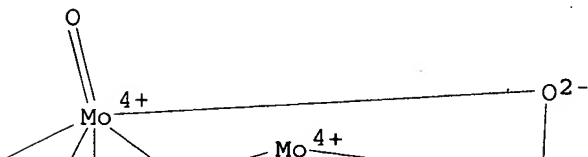


PAGE 3-A

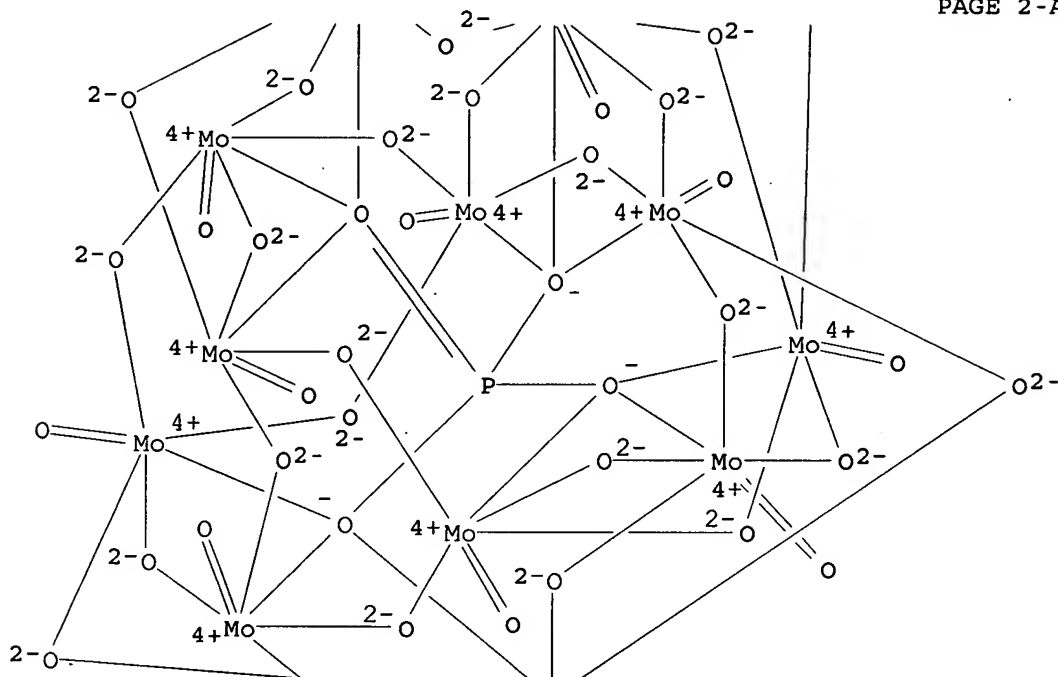
 $\bullet_3 \text{ H}^+$ 

```
RN      12026-57-2   HCAPLUS
CN      Molybdate(3-), tetracosamolybdato[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'']:.kappa.O'':κO'':κO'':κO'']]dodeca-, trihydrogen
          (9CI)    (CA INDEX NAME)
```

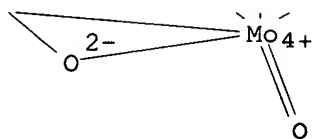
PAGE 1-A



PAGE 2-A

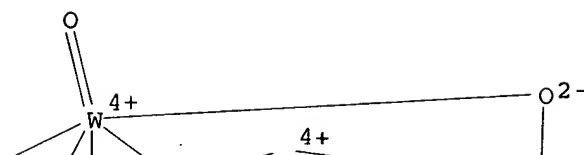


PAGE 3-A

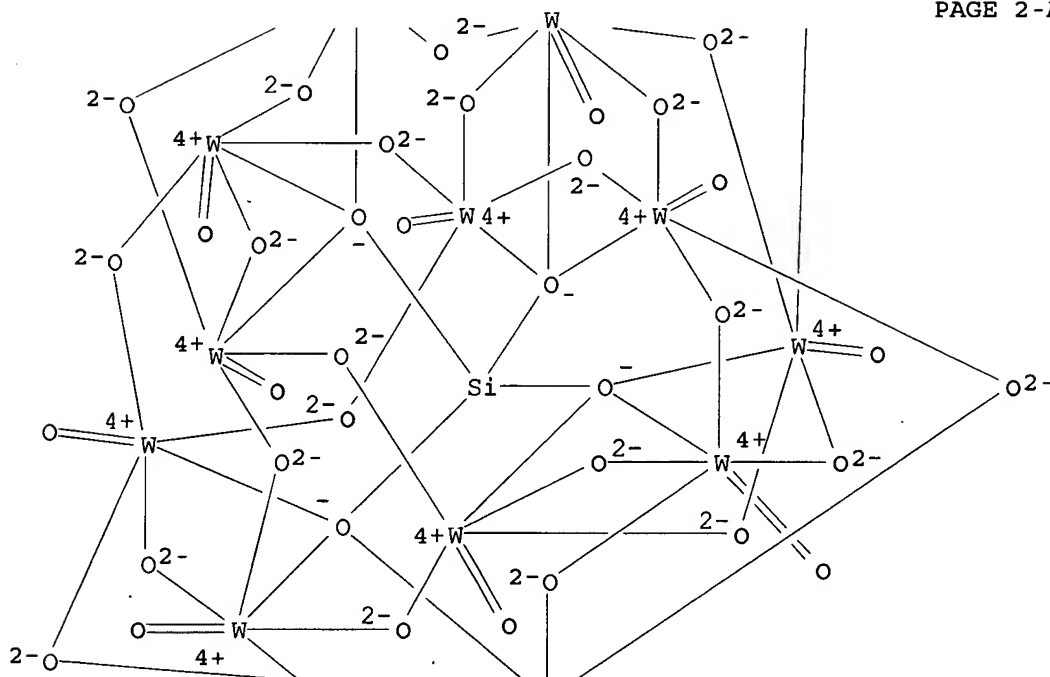
● 3 H<sup>+</sup>

RN 12027-38-2 HCAPLUS  
 CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp  
 a.O':κO':κO':κO':κO':κO':κO':κO':.kap  
 pa.O':κO':κO':κO':κO':κO':κO':κO':.kap  
 (9CI) (CA INDEX NAME)

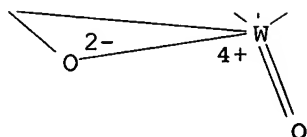
PAGE 1-A



PAGE 2-A



PAGE 3-A

 $\bullet_4 \text{H}^+$ 

RE.CNT 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

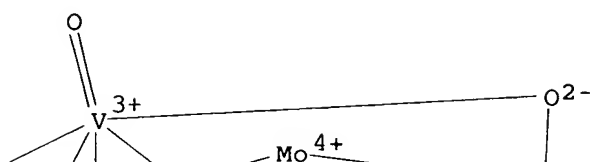
L32 ANSWER 58 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1996:737390 HCAPLUS  
DN 126:89596  
TI Heteropoly acids as oxidation catalysts in synthesis of K-vitamins  
AU Matveev, K. I.; Odyakov, V. F.; Zhizhina, E. G.  
CS Boreskov Institute of Catalysis, Novosibirsk, 630090, Russia  
SO Journal of Molecular Catalysis A: Chemical (1996), 114(1-3),  
151-160  
CODEN: JMCCF2; ISSN: 1381-1169  
PB Elsevier  
DT Journal  
LA English  
AB Mo-V-phosphoric heteropoly acids of the Keggin structure H3+nPMo12-nVnO40  
(HPA-n) and their acidic salts were found to be efficient catalysts for  
2-methyl-1-naphthol (MN) oxidation by dioxygen to 2-methyl-1,4-naphthoquinone  
(menadione, or vitamin K3). The reaction occurs in two steps, i.e., HPA-n  
reduction by MN followed by the product isolation and HPA-n regeneration by  
dioxygen. For the reaction MN + HPA-n, carried out in a two-phase aqueous  
organic solvent system, the effect of the HPA-n composition and reaction  
conditions on the HPA-n selectivity and activity were studied. The  
reaction mechanism and methods of increasing the catalyst selectivity are  
suggested. The reaction has been used in a new environmentally harmless  
technol. for producing the K-group vitamins.

CC 30-40 (Terpenes and Terpenoids)  
IT 12293-15-1 12293-21-9 12293-24-2  
54327-43-4 140445-61-0 170503-64-7 170503-65-8 185608-41-7  
185608-42-8 185608-43-9 185608-44-0 185608-45-1 185608-46-2  
185608-49-5 185671-05-0 185671-11-8  
RL: CAT (Catalyst use); USES (Uses)  
(heteropoly acids as oxidation catalysts in synthesis of K  
vitamins).

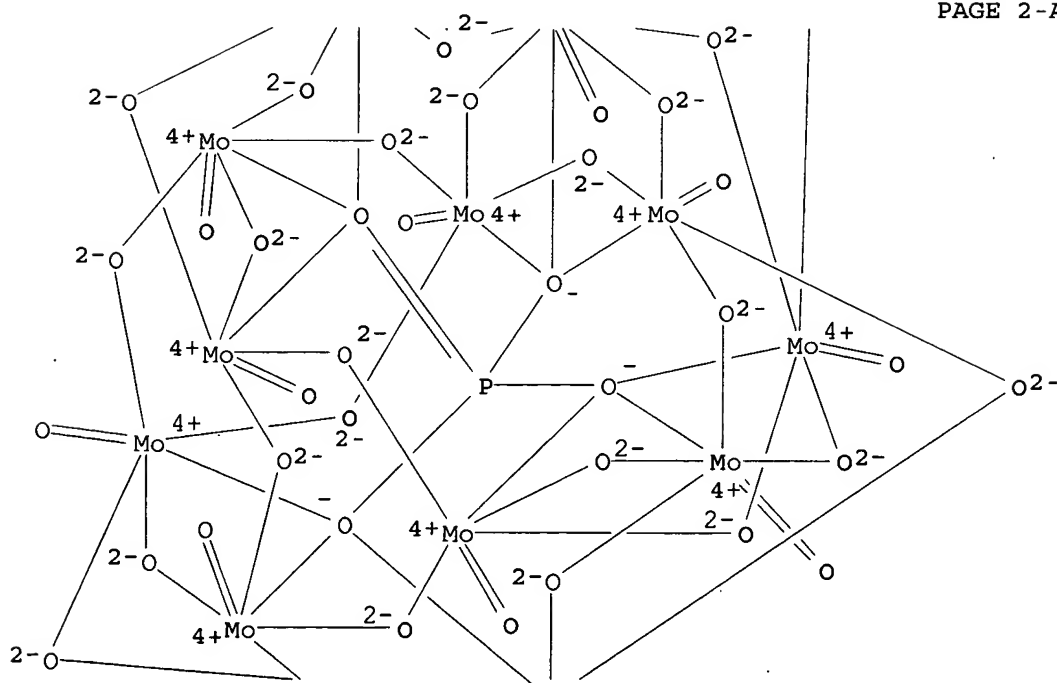
IT 12293-15-1 12293-21-9 12293-24-2  
54327-43-4  
RL: CAT (Catalyst use); USES (Uses)  
(heteropoly acids as oxidation catalysts in synthesis of K  
vitamins)

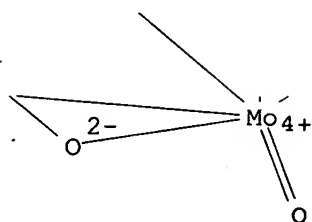
RN 12293-15-1 HCAPLUS  
CN Vanadate(4-), (eicosa-μ-oxoundeca-oxoundecamolybdate)tetra-μ-  
oxooxo [μ12-[phosphato(3-)-κO:κO:κO:κO'  
'':κO':κO'':κO'':κO'':κO'':κO'':κO'':κO'':κO'':κO'':κO'  
a.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



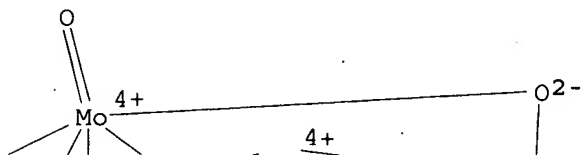


PAGE 3-A

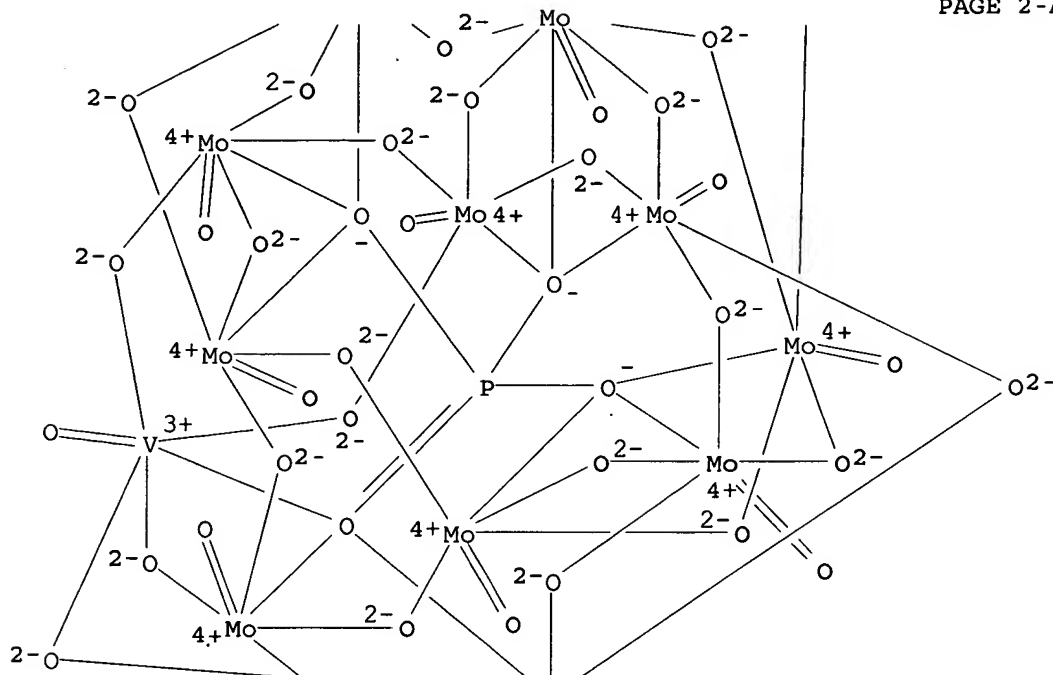
●4 H<sup>+</sup>

RN 12293-21-9 HCAPLUS  
 CN Vanadate (5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-  
 oxodioxo[μ12- [phosphato (3-) -κO:κO:κO:κO':.kappa  
 .O':κO':κO':κO':κO':κO':κO':κO':.ka  
 ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

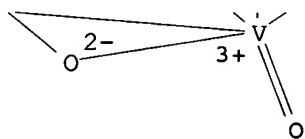
PAGE 1-A



PAGE 2-A



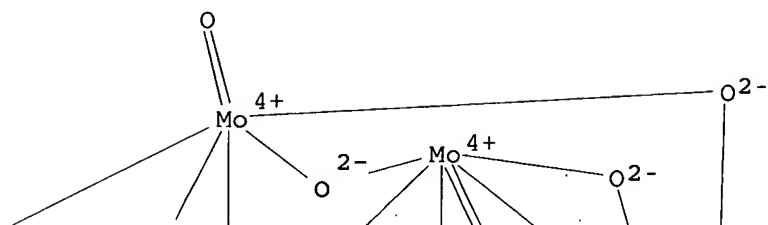
PAGE 3-A

● 5 H<sup>+</sup>

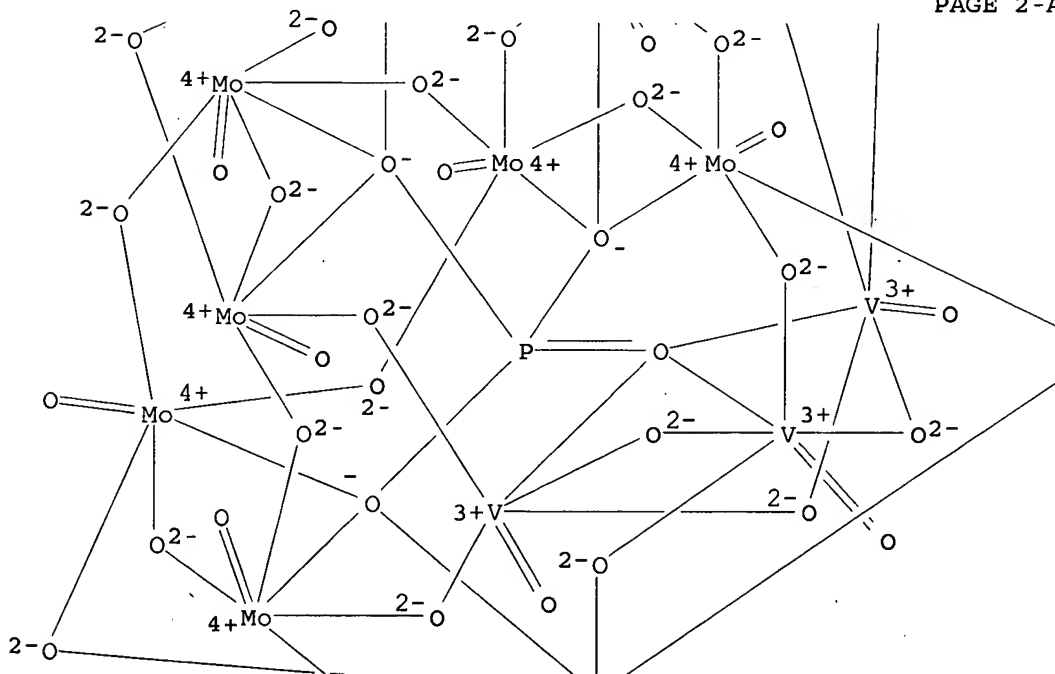
RN 12293-24-2 HCAPLUS  
 CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxonona-oxononamolybdate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen (9CI) (CA INDEX NAME)



PAGE 1-A

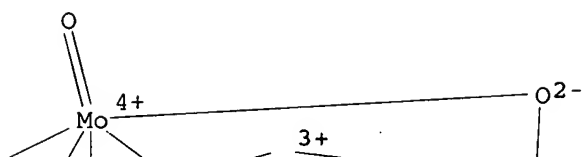


PAGE 2-A

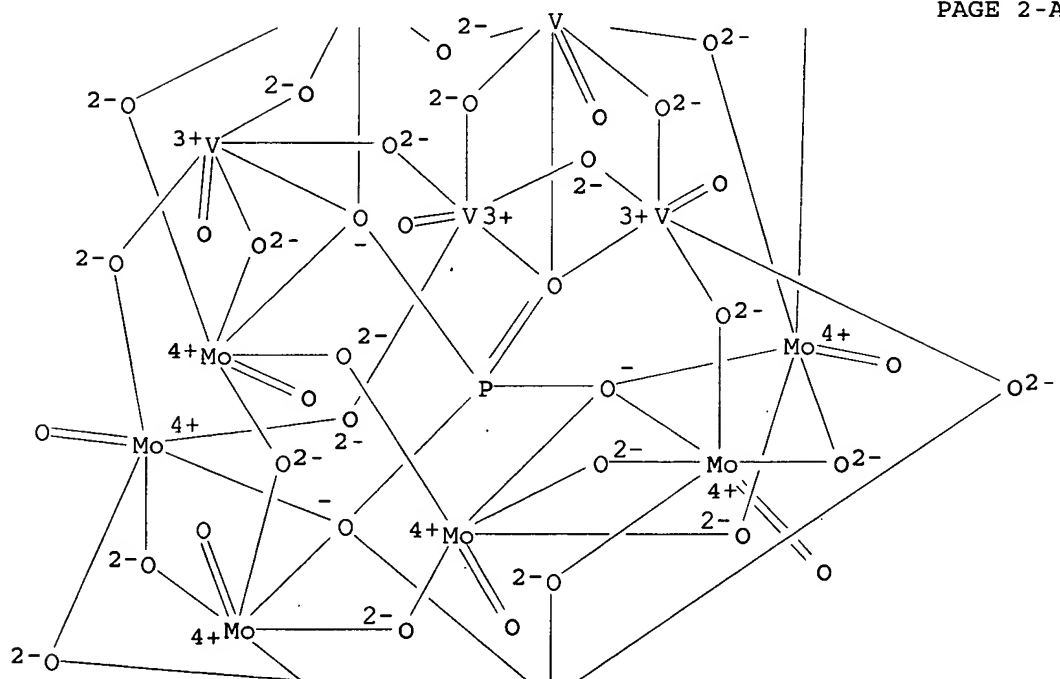




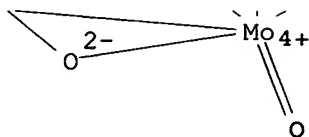
PAGE 1-A



PAGE 2-A



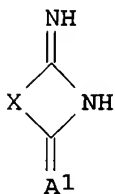
PAGE 3-A

●7 H<sup>+</sup>

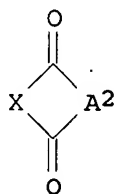
RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 59 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1996:595960 HCAPLUS  
DN 125:247607  
TI Preparation of imino compounds using heteropolymolybdenum acids as catalysts  
IN Oonishi, Kazuhiro; Komya, Kyosuke  
PA Asahi Chemical Ind, Japan  
SO Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08188572	A2	19960723	JP 1995-1966	19950110 <--
PRAI	JP 1995-1966		19950110	<--	
OS	MARPAT 125:247607				
GI					



I



II

AB The title compds. (I; A1 = O, NH; X = aryl, heterocycle), useful as heat-sensitive coloring materials and intermediates for pigments, are prepared I are prepared in high yield efficiently by reaction of II ( A2 = A1, X is same as above) with NH<sub>3</sub> or CO(NH<sub>2</sub>)<sub>2</sub> in the presence of heteropoly acids containing Mo. Thus, phthalic anhydride was intermittently added to a solution of CO(NH<sub>2</sub>)<sub>2</sub>, (NH<sub>4</sub>)<sub>2</sub>MoO<sub>4</sub>·4H<sub>2</sub>O, and NH<sub>4</sub>NO<sub>3</sub> in C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>, and reacted at 170° to give 59.6% 1,3-diiminoisoindoline and 35.1% 3-iminoisoindoline.

IC ICM C07D209-46  
ICS B01J021-06; B01J023-28; B01J027-19; C07D209-50; C07D487-04  
ICA C07B061-00  
CC 27-7 (Heterocyclic Compounds (One Hetero Atom))  
IT 12026-57-2, 12-Molybdophosphoric acid 12027-12-2,  
12-Molybdosilicic acid 12027-67-7, Ammonium molybdate

RL: CAT (Catalyst use); USES (Uses)  
 (synthesis of imino compds. using heteropolymolybdenum acids  
 as catalysts)

IT 57-13-6, Urea, reactions 85-44-9, Phthalic anhydride 117-08-8,  
 Tetrachlorophthalic anhydride 6484-52-2, Ammonium nitrate,  
 reactions 12125-02-9, Ammonium chloride, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (synthesis of imino compds. using heteropolymolybdenum acids as  
 catalysts)

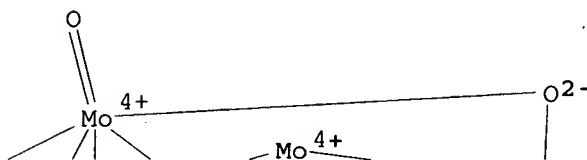
IT 12026-57-2, 12-Molybdophosphoric acid 12027-12-2,  
 12-Molybdosilicic acid

RL: CAT (Catalyst use); USES (Uses)  
 (synthesis of imino compds. using heteropolymolybdenum acids  
 as catalysts)

RN 12026-57-2 HCAPLUS

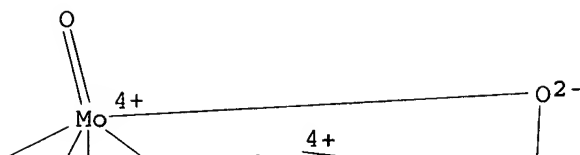
CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

PAGE 1-A

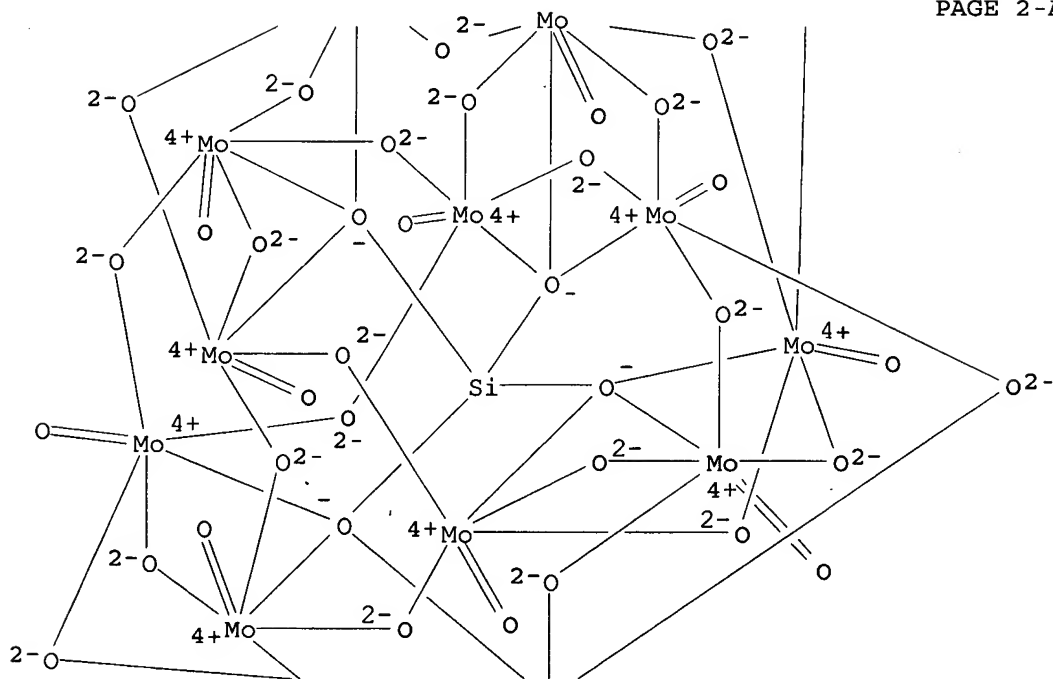




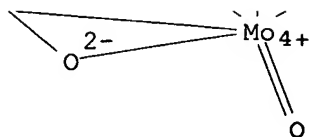
PAGE 1-A



PAGE 2-A



PAGE 3-A

●4 H<sup>+</sup>

L32 ANSWER 60 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 1996:544575 HCAPLUS  
 DN 125:275077  
 TI Catalytic properties of heteropoly complexes containing Fe(III) ions in  
 benzene oxidation by hydrogen peroxide  
 AU Kuznetsova, L. I.; Detusheva, L. G.; Fedotov, M. A.; Likholobov, V. A.  
 CS Boreskov Institute of Catalysis, pr. Akademika Lavrentieva 5, Novosibirsk,  
 630090, Russia  
 SO Journal of Molecular Catalysis A: Chemical (1996), 111(1-2),  
 81-90  
 CODEN: JMCCF2; ISSN: 1381-1169  
 PB Elsevier  
 DT Journal  
 LA English  
 AB Elemental anal., magnetic measurements, IR, <sup>31</sup>P NMR, and UV-VIS  
 spectroscopy were used to study heteropoly complexes (HPC), containing Fe(III)  
 ions and heteropoly anion [PW11O 39]7-, isolated from aqueous solns. as  
 tetrabutylammonium (TBA) salts and dissolved in acetonitrile. The  
 complexes identified are: Fe(III)-substituted complexes [PW11O39Fe(H2O)]  
 4- (1) and [PW11O39Fe(SO4)]6- (1'); Fe(III)-substituted hydroxo complex  
 [PW11O39 Fe(OH)]5- (2') formed during the precipitation of binuclear μ-oxo  
 complex [(PW11O39Fe)2O]10- (2) from aqueous solns. (pH = 3-5) by TBA  
 cations; polynuclear Fe(III)- hydroxo complexes [PW11O39FenOxHy]m- (3)  
 (n.apprx.8). The catalytic activity of complexes both in the hydrogen  
 peroxide decomposition and benzene oxidation in a one-phase system  
 HPC+CH3CN+H2O2(aq)+C6H6, with [HPC] = 6·10<sup>-3</sup>, [H2O2] =  
 0.175-1.6, and [C6H6] = 1.4-5.6 M at 70°C have been  
 studied. In the presence of 1 or 1', the molar ratio between phenol  
 formed and H2O2 decomposed equals 10-20%. HPC containing SO42- ions shows a far  
 lower activity in both reactions. The kinetics of PhOH accumulation  
 conforms to the chain mechanism of H2O2 decomposition Benzene is oxidized by  
 OH radicals coordinated to HPC. In the presence of complex 2' the rate of  
 H2O2 decomposition is considerably lower. Thus the molar ratio of phenol  
 formed and H2O2 decomposed is almost 60%. The mechanism of H2O2 activation  
 by 2' includes most likely the initial formation of a peroxo complex which  
 was observed in absorption spectra. The state of HPC affected by the  
 reaction mixture components was studied by UV-VIS spectra. The products of  
 one-electron phenol (or pyrocatechol) oxidation inhibit the catalytic  
 activity due to the complex formation with Fe(III) ions in HPC.  
 CC 22-7 (Physical Organic Chemistry)  
 IT 10421-48-4D, Ferric nitrate, reaction products with  
 sodium tungstophosphate 87261-30-1D, reaction products with  
 ferric nitrate 94772-23-3 182413-46-3  
 182413-48-5 182413-49-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (benzene oxidation by hydrogen peroxide in presence of iron containing



tungstophosphoric heteropoly acid catalysts)

IT 10028-22-5, Ferric sulfate 10421-48-4, Ferric nitrate 87261-30-1

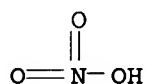
RL: RCT (Reactant); RACT (Reactant or reagent) (for preparation of ferrotungstophosphates)

IT 10421-48-4D, Ferric nitrate, reaction products with sodium tungstophosphate 87261-30-1D, reaction products with ferric nitrate 94772-23-3 182413-46-3 182413-48-5 182413-49-6

RL: CAT (Catalyst use); USES (Uses) (benzene oxidation by hydrogen peroxide in presence of iron containing tungstophosphoric heteropoly acid catalysts)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)

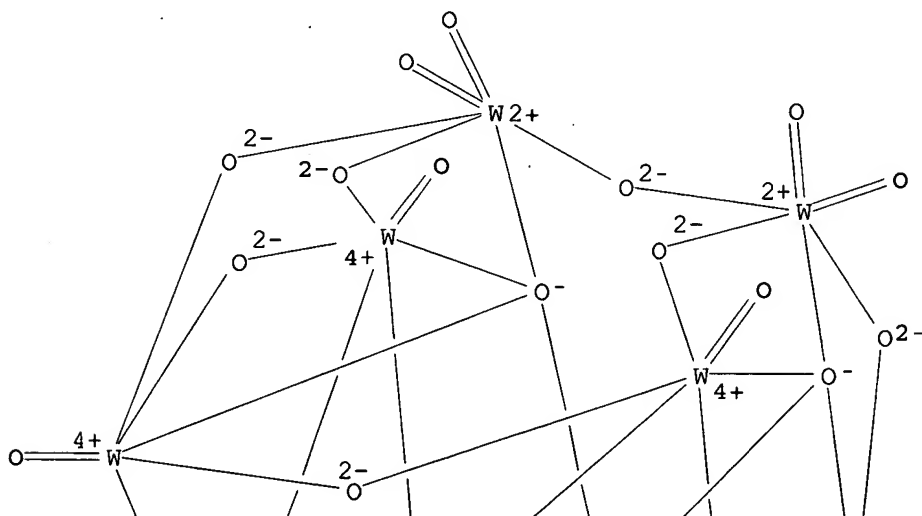


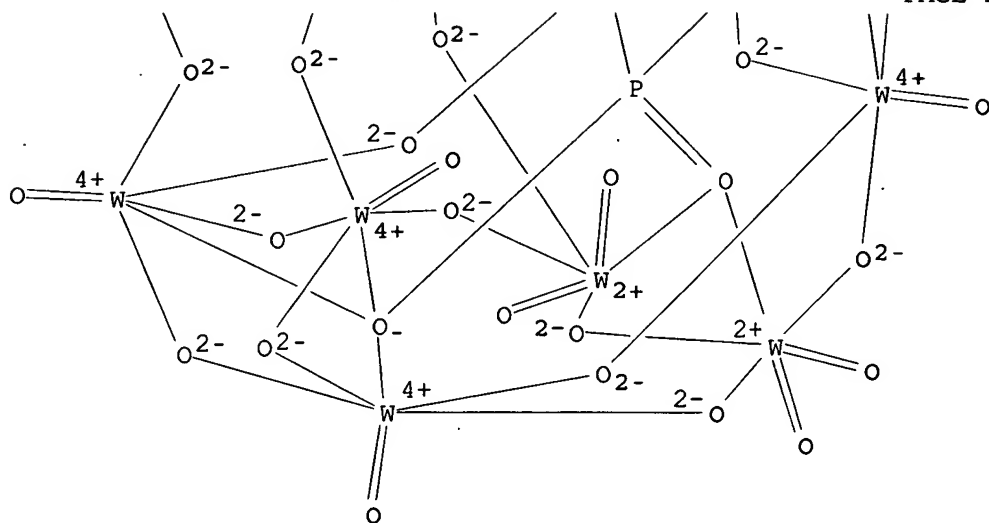
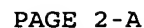
●1/3 Fe(III)

RN 87261-30-1 HCAPLUS

CN Tungstate(7-), eicosa-μ-oxopentadeca-oxo[μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO'':κO'']]undeca-, heptasodium (9CI) (CA INDEX NAME)

PAGE 1-A





PAGE 3-A

●7 Na<sup>+</sup>

```
RN      94772-23-3   HCAPLUS
CN      1-Butanaminium, N,N,N-tributyl-, (aquaferate)tetracosam-
oxoundeca-oxo [μ12-[phosphato(3-)-κO:κO:κO:κO':.k
appa.O':κO':κO'':κO'':κO'':κO'':κO'']
κO'']]undecatungstate(4-) (4:1) (9CI) (CA INDEX NAME)
```

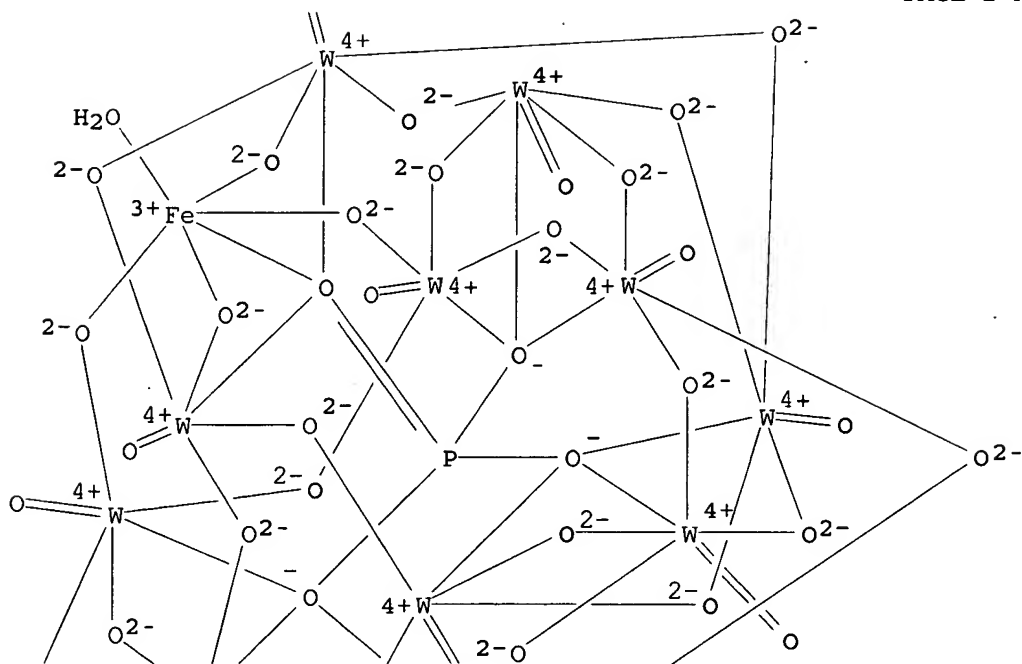
CM 1

CRN 94772-22-2  
CMF Fe H2 O40 P W11  
CCI CCS

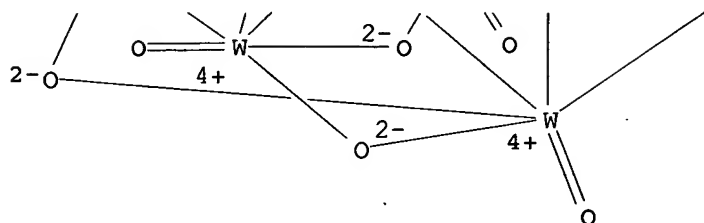
PAGE 1-A



PAGE 2-A



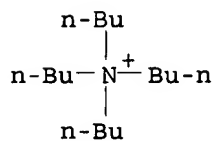
PAGE 3-A



CM 2

CRN 10549-76-5

CMF C16 H36 N



RN 182413-46-3 HCAPLUS

CN 1-Butanaminium, N,N,N-tributyl-, tetracosam-oxoundeca-oxo[μ12-  
[phosphato(3-)-O:O:O:O':O':O':O':O':O':O':O':O':O':O':O':O']][[sulfato(2-)-  
O]ferrate]undecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 182413-45-2

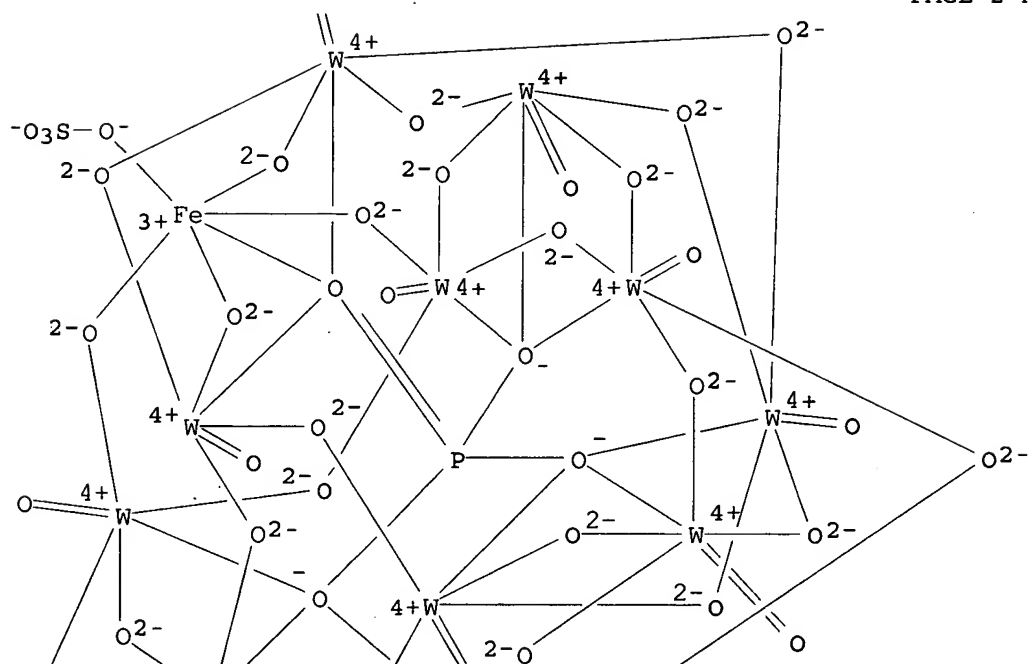
CMF Fe O43 P S W11

CCI CCS

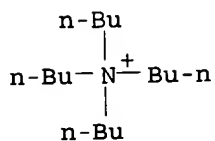
PAGE 1-A



PAGE 2-A

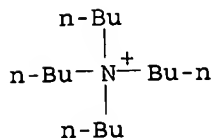


CRN 10549-76-5  
CMF C16 H36 N



CRN 182413-47-4  
CMF Fe2 079 P2 W22  
CCI CCS

CRN 10549-76-5  
CMF C16 H36 N



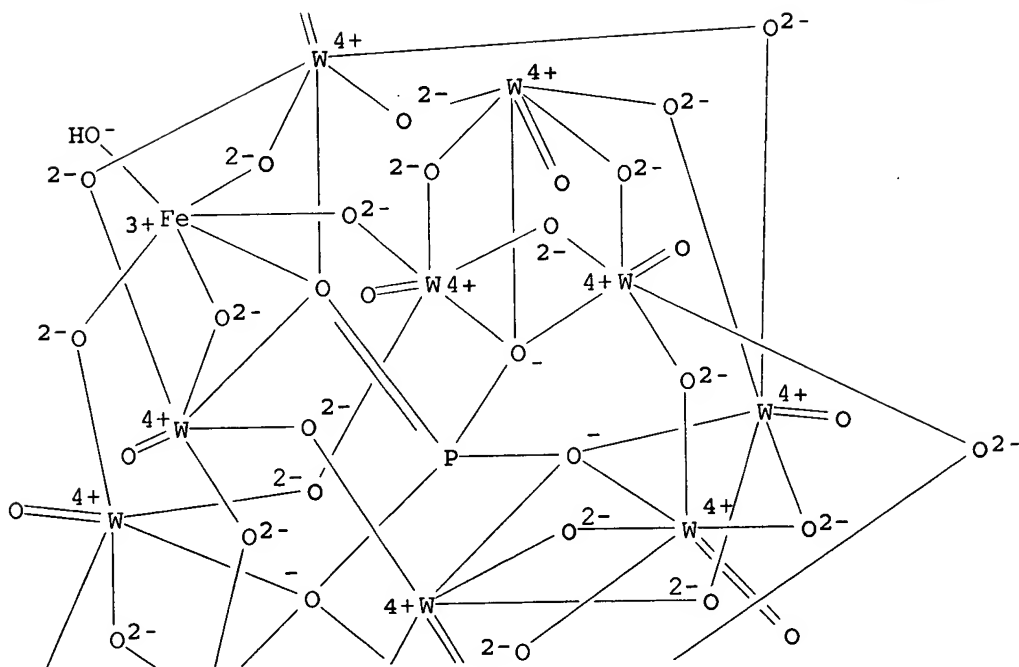
CRN 145238-79-5

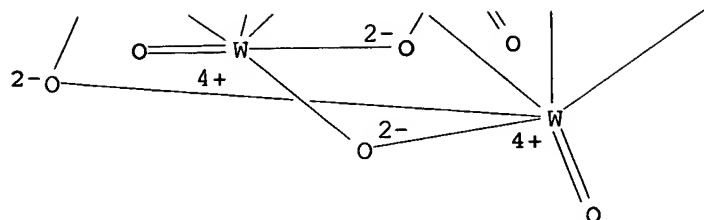
CMF Fe H O40 P W11  
CCI CCS

PAGE 1-A



PAGE 2-A



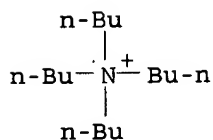


PAGE 3-A

CM 2

CRN 10549-76-5

CMF C16 H36 N

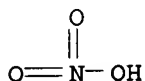


IT 10421-48-4, Ferric nitrate

RL: RCT (Reactant); RACT (Reactant or reagent)  
(for preparation of ferrotungstophosphates)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

L32 ANSWER 61 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1996:463013 HCAPLUS

DN 125:247242

TI Catalytic oxidation of cyclohexene with molecular oxygen by  
polyoxometalate-intercalated hydrotalcitesAU Guo, Jun; Jiao, Qing Ze; Shen, Jian Ping; Jiang, Da Zhen; Yang, Guang Hui;  
Min, En Ze

CS Dep. Chem., Jilin Univ., Changchun, 130023, Peop. Rep. China

SO Catalysis Letters (1996), 40(1,2), 43-45

CODEN: CALEER; ISSN: 1011-372X

PB Baltzer

DT Journal

LA English

AB Cyclohexene was oxidized with mol. oxygen over transition-metal-



```

substituted polyoxometalate-intercalated hydrotalcites to produce
2-cyclohexene-1-one and 2-cyclohexene-1-ol with high selectivity under
mild reaction conditions.
CC 24-5 (Alicyclic Compounds)
Section cross-reference(s): 67
IT 81553-20-0 105785-76-0 109494-69-1
135266-66-9
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or
reagent); USES (Uses)
(catalytic oxidation of cyclohexene with mol. oxygen by
polyoxometalate-intercalated hydrotalcites)
IT 110-83-8, Cyclohexene, reactions 12027-46-2 12207-66-8 37194-75-5
39293-41-9 81553-16-4 125844-54-4, Aluminum magnesium hydroxide
nitrate (AlMg3(OH)8(NO3)) 128190-31-8 135244-69-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalytic oxidation of cyclohexene with mol. oxygen by
polyoxometalate-intercalated hydrotalcites)
IT 81553-20-0 105785-76-0 109494-69-1
135266-66-9
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or
reagent); USES (Uses)
(catalytic oxidation of cyclohexene with mol. oxygen by
polyoxometalate-intercalated hydrotalcites)
RN 81553-20-0 HCAPLUS
CN Tungstate(5-), (aquaferate) [μ12-[orthosilicato(4-)-
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO'':κO'':κO'']]tetracosam-
oxoundecaoundeca-, pentapotassium (9CI) (CA INDEX NAME)

```

PAGE 1-A

 $\circ$

RN	105785-76-0	HCAPLUS
CN	Tungstate(6-), (aquacobaltate) [μ <sub>12</sub> -[orthosilicato(4-) - κO':κO':κO':κO':κO':κO'':.kappa .O'':κO''':κO''':κO''':κO''']tetracosa-μ-oxoundecaοxoundeca-, hexapotassium (9CI) (CA INDEX NAME)	

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A

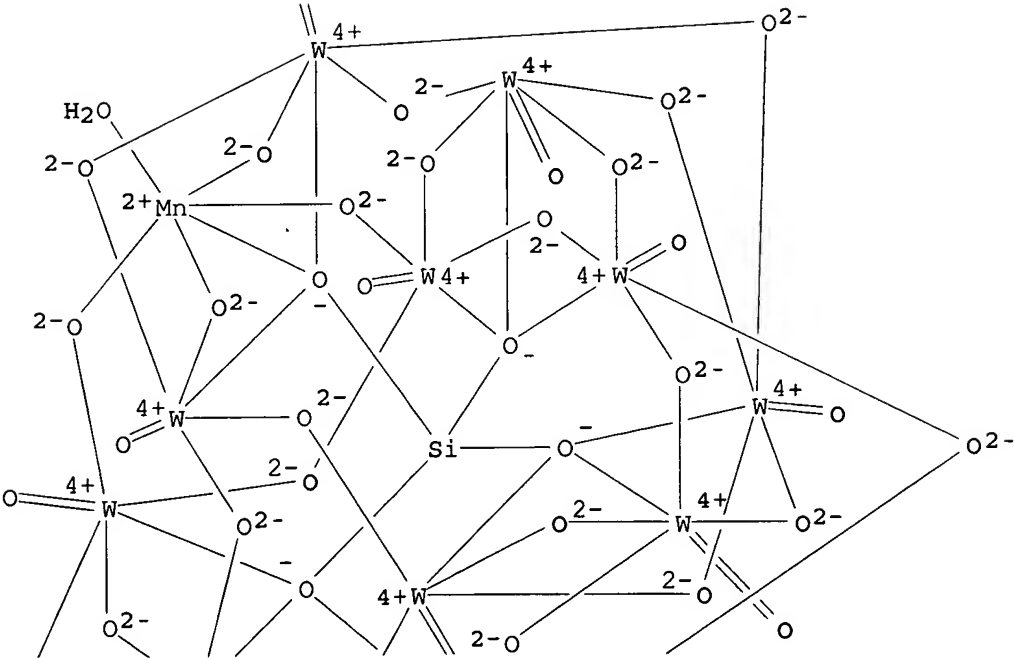
●<sub>6</sub> K<sup>+</sup>

RN	109494-69-1	HCAPLUS
CN	Tungstate(6-), (aquamanganate) [μ12-[orthosilicato(4-) - κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO'':κO'':κO'']tetracosa-μ- oxoundeca-oxoundeca-, hexapotassium (9CI) (CA INDEX NAME)	

PAGE 1-A



PAGE 2-A



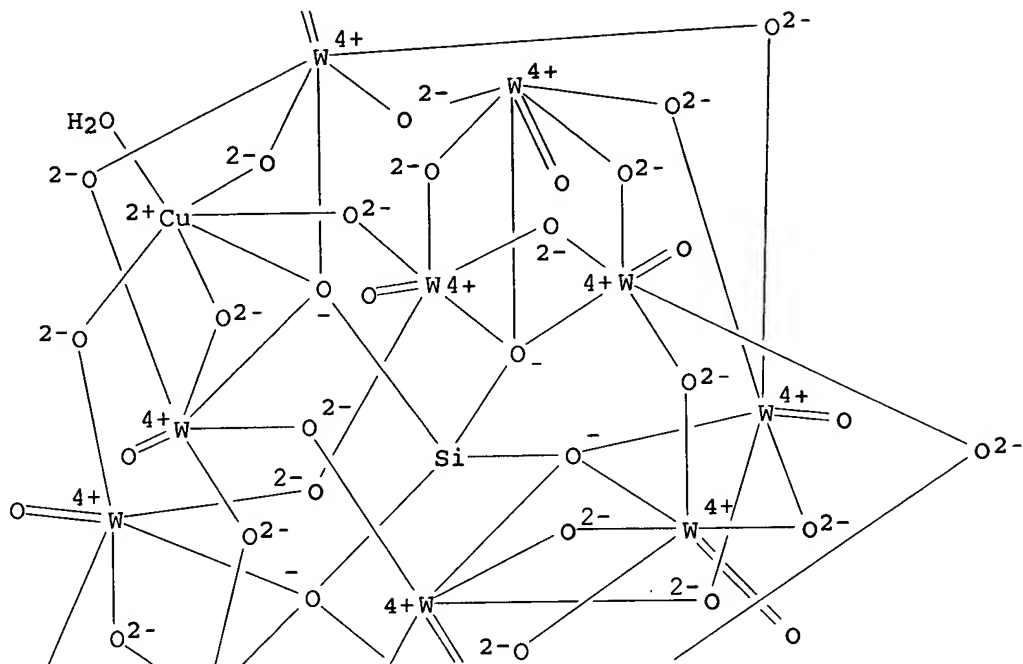
●<sub>6</sub> K<sup>+</sup>

```
RN      135266-66-9   HCAPLUS
CN      Tungstate(6-), (aquacuprate) [μ12-[orthosilicato(4-)-
κO:κO:κO:κO':κO':κO'':.kappa
.O'':κO'':κO'':κO'':κO'']]tetracosam-
oxoundeca-oxoundeca-, hexapotassium (9CI)  (CA INDEX NAME)
```

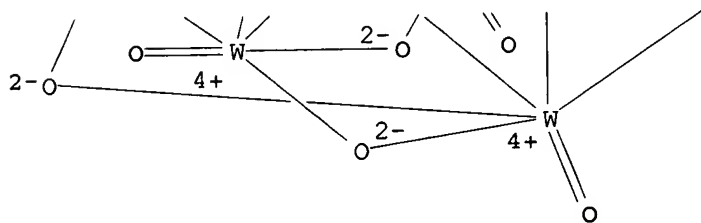
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 6 K<sup>+</sup>

L32 ANSWER 62 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1996:363266 HCAPLUS

DN 125:11802

TI Removal of heteropoly compounds from polyethers, polyesters, and polyester-polyethers

IN Weyer, Hans-Juergen; Fischer, Rolf

PA BASF A.-G., Germany

SO Ger. Offen., 6 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

PATENT NO.

KIND DATE

APPLICATION NO.

DATE

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PRAI	DE	1994-4435934	A	19941007	<--
	WO	1995-EP3956	W	19951006	<--

77.3, THF homopolymer 21.2, H3PW12O40 (I) 1.2, and water 0.3% was treated with 200 g dioctyl ether to give a polymer product with 5 ppm I, a level reduced to <1 ppm after treatment with active carbon.

ICS C08G065-30; C08G063-90; C08J011-02

ICI C10N040-08

Section cross-reference(s): 37

RL: CAT (Catalyst use); REM (Removal or disposal); PROC  
(Process); USES (Uses)  
(removal of heteropoly compds. from THF homopolymer)

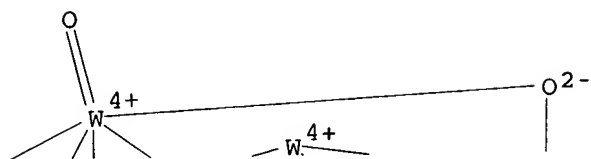
```

RL: CAT (Catalyst use); REM (Removal or disposal); PROC
(Process); USES (Uses)
      (removal of heteropoly compds. from THF homopolymer)

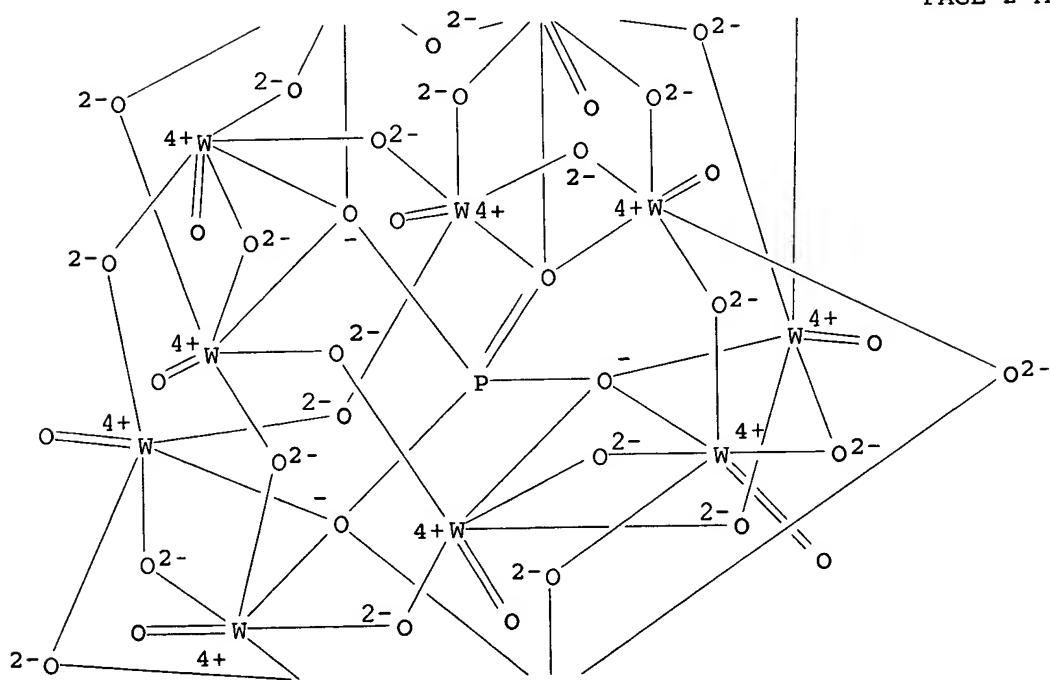
```

CN Tungstate(3-), tetracosam-μ-oxododecaoxo[μ<sub>12</sub>-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen  
(9CI) (CA INDEX NAME)

PAGE 1-A

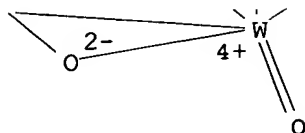


PAGE 2-A





PAGE 3-A

●3 H<sup>+</sup>

L32 ANSWER 63 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1996:290204 HCAPLUS

DN 124:320128

TI Olefin hydration process and catalyst

IN Haining, Gordon John

PA Bp Chemicals Limited, UK

SO Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 704240	A1	19960403	EP 1995-306320	19950906 <--
	EP 704240	B1	19991201		
	R: BE, DE, FR, GB, NL, SE				
	US 5714429	A	19980203	US 1995-461435	19950605 <--
	US 5684216	A	19971104	US 1995-505673	19950721 <--
	CA 2158527	AA	19960327	CA 1995-2158527	19950918 <--
	CN 1130103	A	19960904	CN 1995-117727	19950925 <--
	CN 1069225	B	20010808		
	JP 08192047	A2	19960730	JP 1995-247838	19950926 <--
PRAI	GB 1994-19387	A	19940926	<--	
	US 1995-461435	A3	19950605	<--	

AB The process for hydrating olefins to the corresponding alcs. in a vapor phase uses a novel catalyst **composition** comprising a heteropolyacid and a siliceous support which is in the form of extrudates or pellets. By using the specific catalyst **composition**, it is possible not only to increase the space-time-yield of a process but also to prolong the life thereof, thereby reducing the frequency with which the catalyst is changed or replaced on a plant, especially in an olefin hydration process. A catalyst comprised 12-tungstophosphoric acid and silica support.

IC ICM B01J027-188

ICS C07C029-04

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Section cross-reference(s): 23, 67

IT 1313-30-0 1343-93-7, 12-Tungstophosphoric acid  
 12026-57-2, 12-Molybdophosphoric acid 12027-12-2,  
 12-Molybdosilicic acid 12027-38-2, 12-Tungstosilicic acid  
 12027-41-7 12263-60-4 60646-65-3 122795-31-7  
 152514-03-9

RL: CAT (Catalyst use); USES (Uses)

(olefin hydration catalyst based on heteropoly acid and  
 silica support)

IT 1313-30-0 1343-93-7, 12-Tungstophosphoric acid  
 12026-57-2, 12-Molybdophosphoric acid 12027-12-2,

12-Molybdosilicic acid 12027-38-2, 12-Tungstosilicic acid  
12263-60-4 122795-31-7 152514-03-9

RL: CAT (Catalyst use); USES (Uses)

(olefin hydration catalyst based on heteropoly acid and  
silica support)

RN 1313-30-0 HCAPLUS

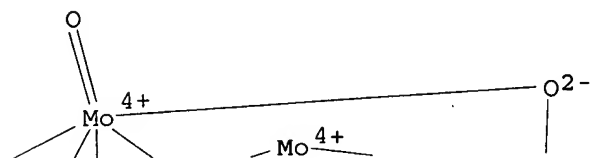
CN Molybdate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-

κO:κO:κO:κO':κO':κO':κO'':κappa

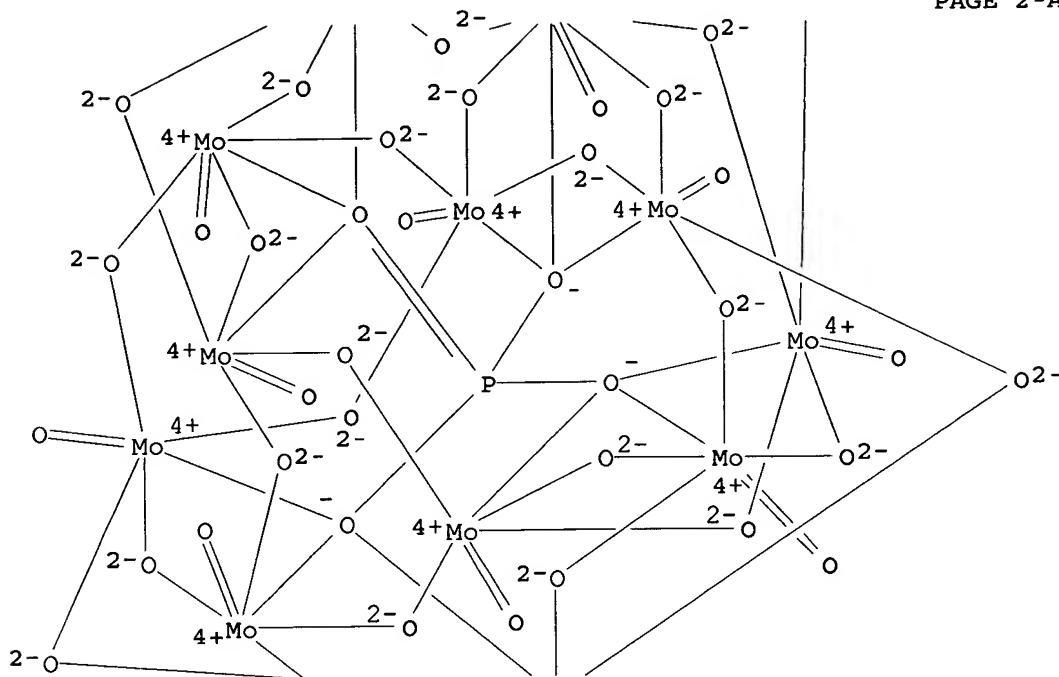
.O':κO':κO':κO':κO':κO']dodeca-, trisodium

(9CI) (CA INDEX NAME)

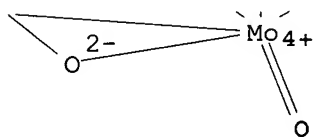
PAGE 1-A



PAGE 2-A

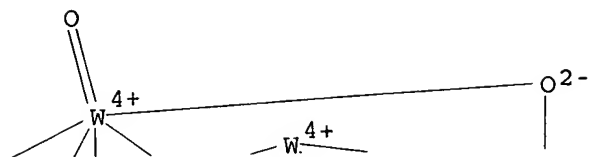


PAGE 3-A

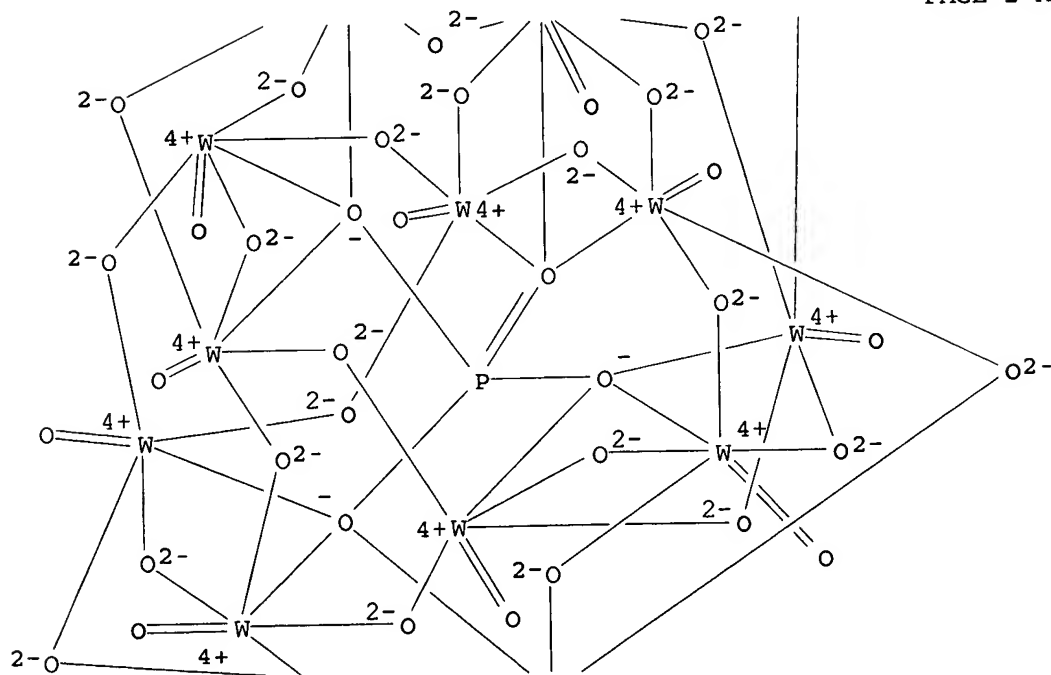
●3 Na<sup>+</sup>

RN 1343-93-7 HCAPLUS  
 CN Tungstate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



●<sub>3</sub> H<sup>+</sup>

```

RN      12026-57-2   HCAPLUS
CN      Molybdate(3-), tetracosam-μ-oxododecaoxo[μ12-[phosphato(3-)-
      κO:κO:κO:κO':κO':κO':κO'':.kappa
      .O'':κO'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen
      (9CI) (CA INDEX NAME)

```

PAGE 1-A

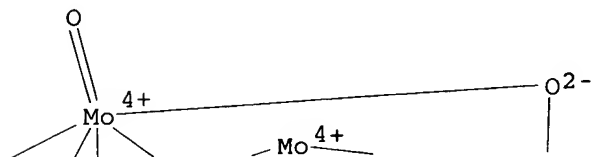


FIG. 1

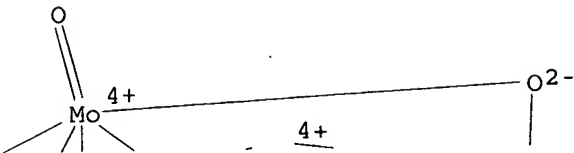
 $\bullet_3 \text{H}^+$ 

```

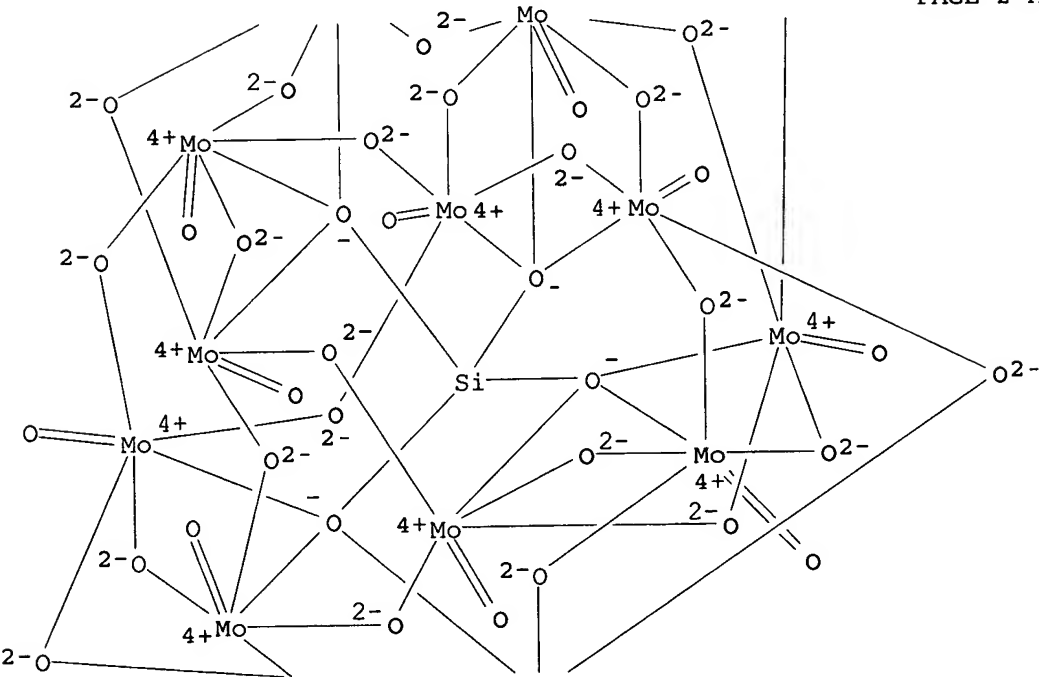
RN      12027-12-2  HCAPLUS
CN      Molybdate(4-), [mu12-[orthosilicato(4-)-kO:kO:kO:.kapp
a.O':kO':kO':kO'':kO'':kO'':kO'':.kap
pa.O'':kO'']]tetracosam-oxododecaoxododeca-, tetrahydrogen
(9CI)   (CA INDEX NAME)

```

PAGE 1-A



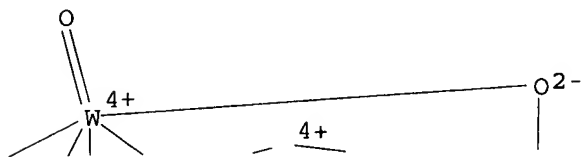
PAGE 2-A



●<sub>4</sub> H<sup>+</sup>

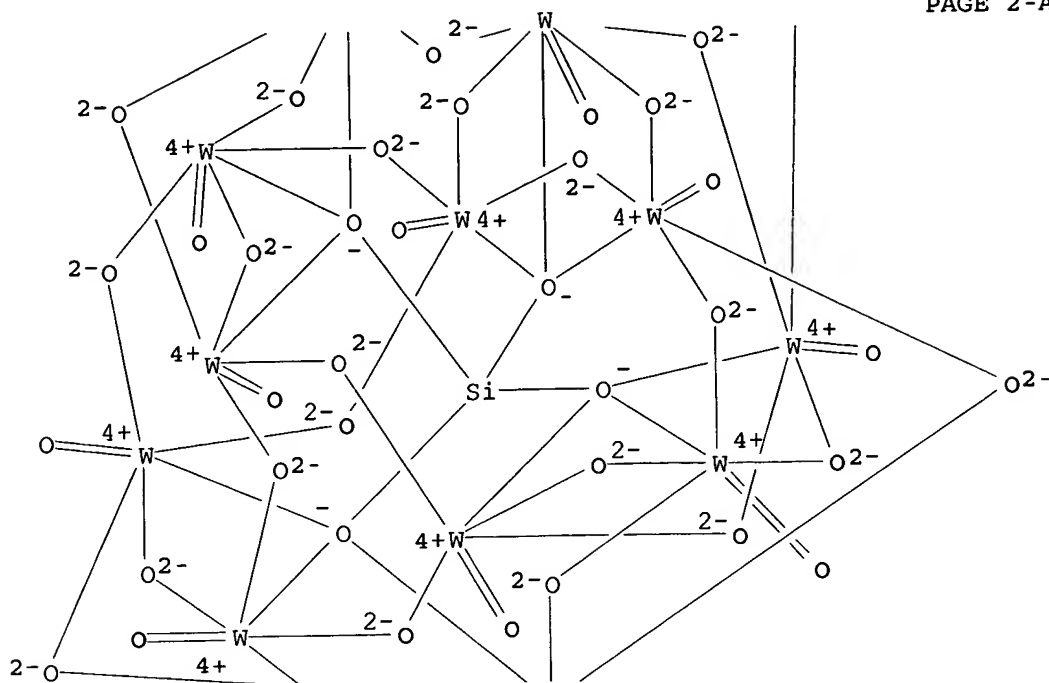
```
RN      12027-38-2   HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI)    (CA INDEX NAME)
```

PAGE 1-A

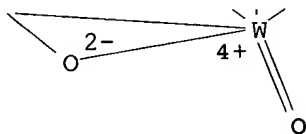




PAGE 2-A



PAGE 3-A

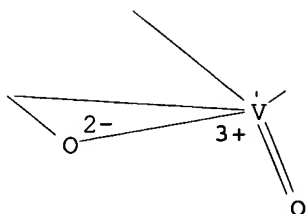
● 4 H<sup>+</sup>

RN 12263-60-4 HCAPLUS  
 CN Molybdate(6-), hexatriaconta-μ-oxooctadeca-oxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO':.kappa a.O':κO':κO':κO':κO':κO':κO':.ka]]octadeca-, hexaammonium (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 122795-31-7 HCAPLUS  
 CN Vanadate(5-), (heptadeca-μ-oxodeca-oxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa .O':κO':κO':κO':κO':κO':κO':.ka ppa.O':κO':κO':κO':κO':κO':κO':.ka]]di-, pentapotassium (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



PAGE 3-A

●<sub>5</sub> K<sup>+</sup>

```

RN      152514-03-9  HCAPLUS
CN      Molybdate(6-), hexatriaconta-μ-oxooctadeca-oxobis[μ9-[phosphato(3-)-
κO:κO:κO:κO':κO':κO'':κO'':.kapp
a.O'':κO'']]octadeca-, hexapotassium (9CI)  (CA INDEX NAME)

```

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L32 ANSWER 64 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1996:184055 HCAPLUS  
DN 124:205574  
TI Dawson-structured heteropoly acid catalyst for hydroxylation of phenol by  
hydrogen peroxide  
IN Wu, Tonghao; Yu, Jiangeng; Wang, Guojia  
PA Jilin Univ., Peop. Rep. China  
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.  
CODEN: CNXXEV

L32 ANSWER 65 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1995:753646 HCAPLUS  
DN 123:148672  
TI Heteropoly compounds and use in aromatic alkylation  
IN Soled, Stuart L.; Da Costa Paes, Jose Augusto; Gutierrez, Antonio; Miseo, Sabato; Gates, William Ellis; Riley, Kenneth L.  
PA Exxon Research and Engineering Co., USA  
SO PCT Int. Appl., 26 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 9513869	A1	19950526	WO 1994-US13326	19941118 <--
	W: CA, JP				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5866739	A	19990202	US 1997-902047	19970729 <--
PRAI	US 1993-156178	A	19931119	<--	
	US 1994-336364	A	19941108	<--	
	US 1995-488665	B1	19950608	<--	
AB	The present invention relates to a catalyst composition, its methods.				

IC ICM B01J027-19

CC 51-4 (Fossil Fuels, Derivatives, and Related Products)

IT 534-17-8, Cesium carbonate 1343-93-7, 12-Tungstophosphoric acid

RL: CAT (Catalyst use); USES (Uses)

IT 1343-93-7, 12-Tungstophosphoric acid 1343-93-7D,  
12-Tungstophosphoric acid, salts with ammonium, cesium, potassium, or  
rubidium 12026-57-2, 12-Molybdo phosphoric acid

RL: CAT (Catalyst use); USES (Uses)

RN 1343-93-7 HCAPLUS

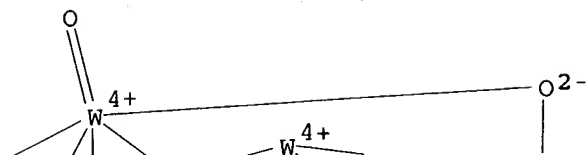
```

      kO:kO:kO:kO':kO':kO':kO''':kappa
      .O''':kO''':kO''':kO''':kO''']dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

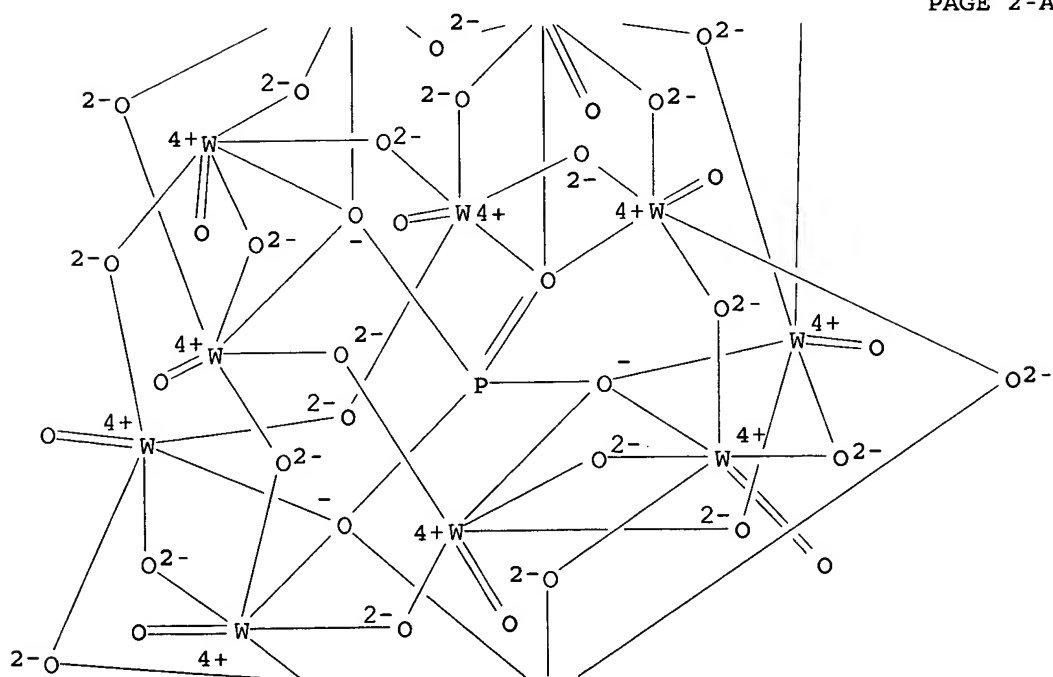
```

(9CI) (CA INDEX NAME)

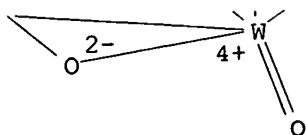
PAGE 1-A



PAGE 2-A

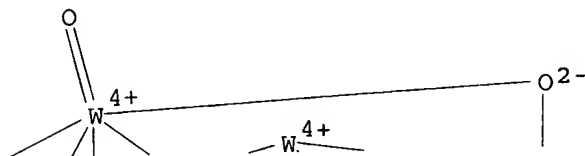


PAGE 3-A

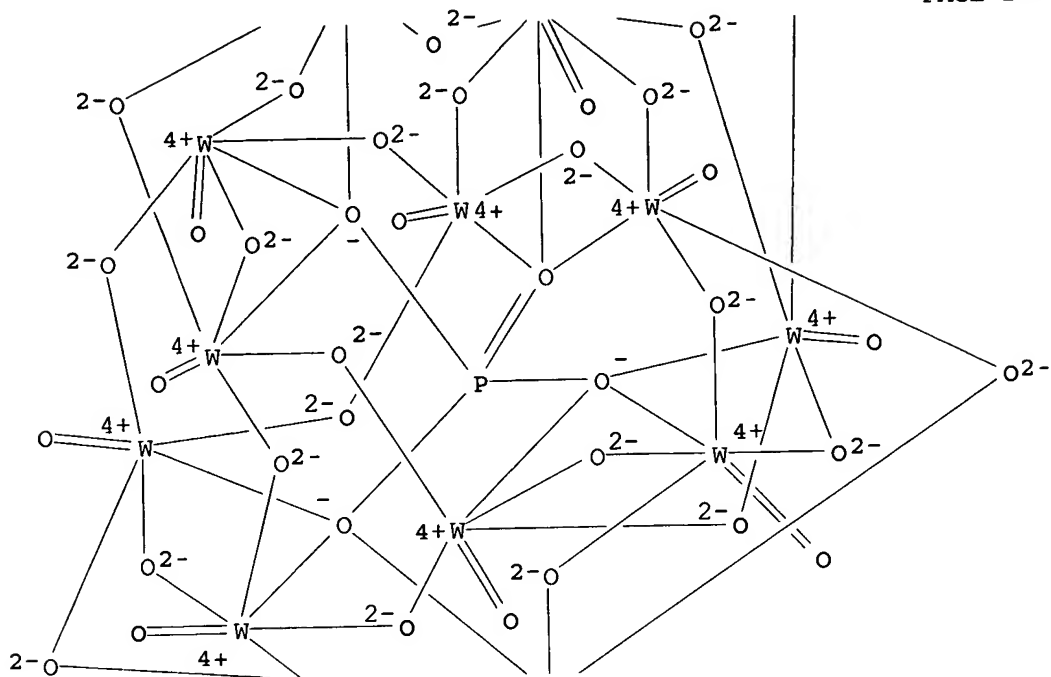
● 3 H<sup>+</sup>

RN 1343-93-7 HCAPLUS  
 CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

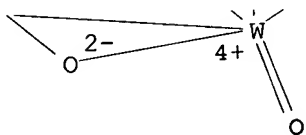
PAGE 1-A



PAGE 2-A

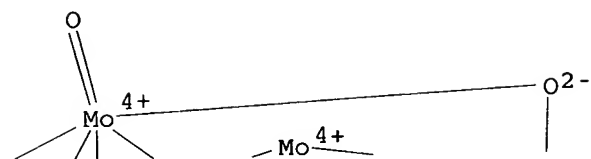


PAGE 3-A

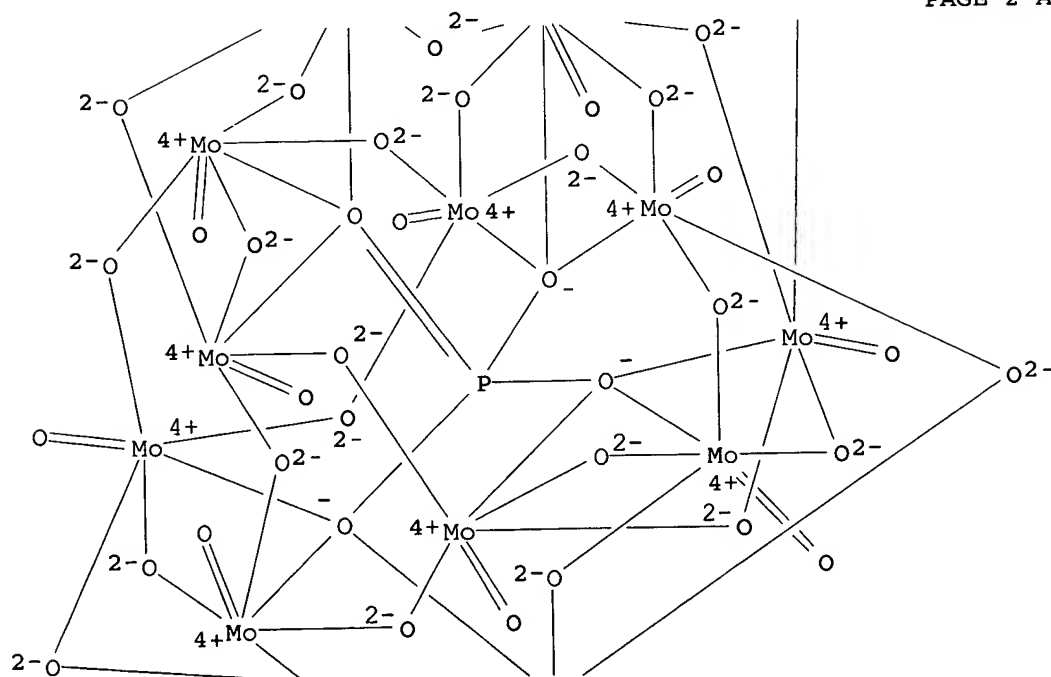
● 3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O'':κO'':κO'':κO'':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

PAGE 1-A

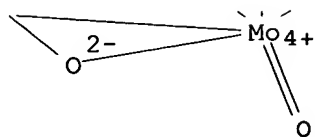


PAGE 2-A



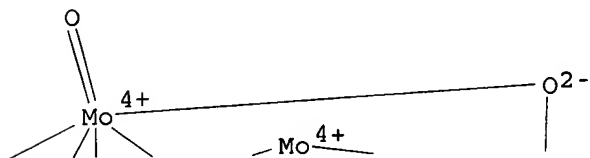


PAGE 3-A

● 3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

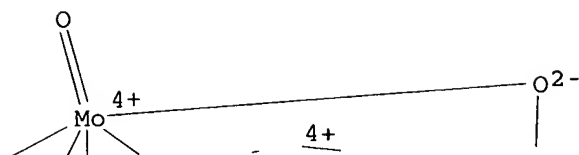
PAGE 1-A



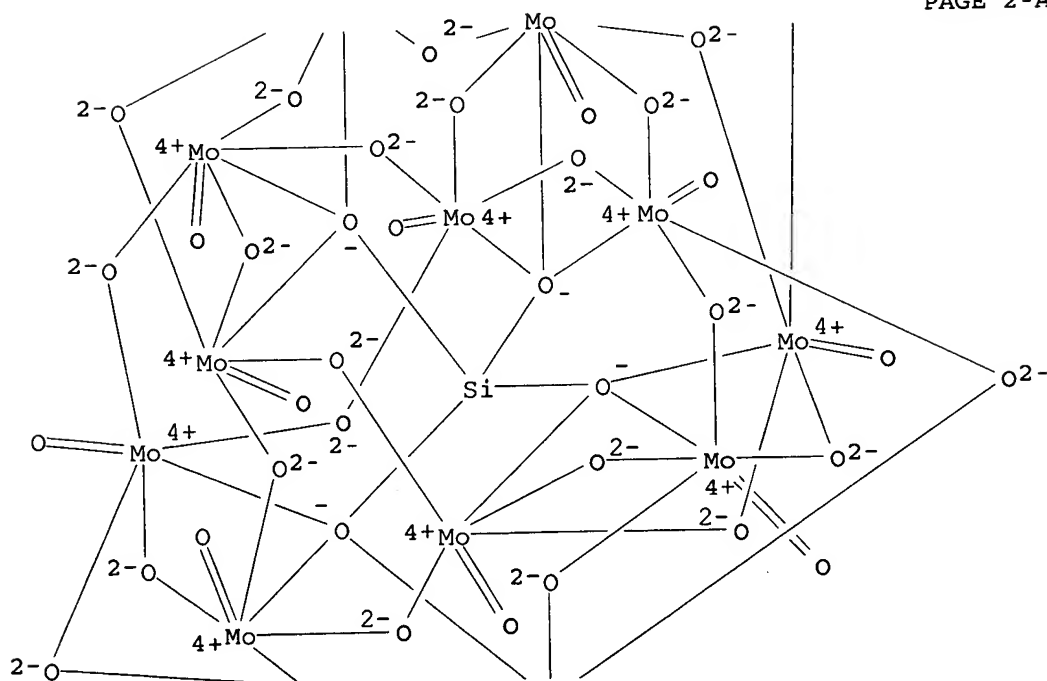
● 3 H<sup>+</sup>

KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505

PAGE 1-A

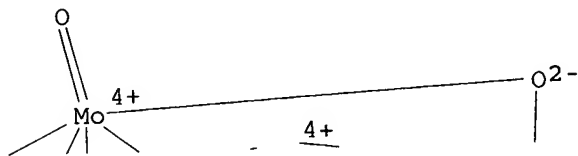


PAGE 2-A



$\bullet_4 \text{H}^+$ 

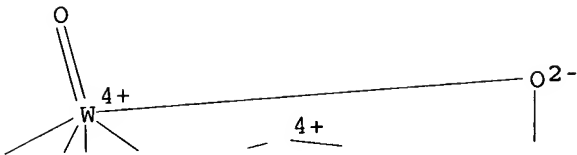
PAGE 1-A



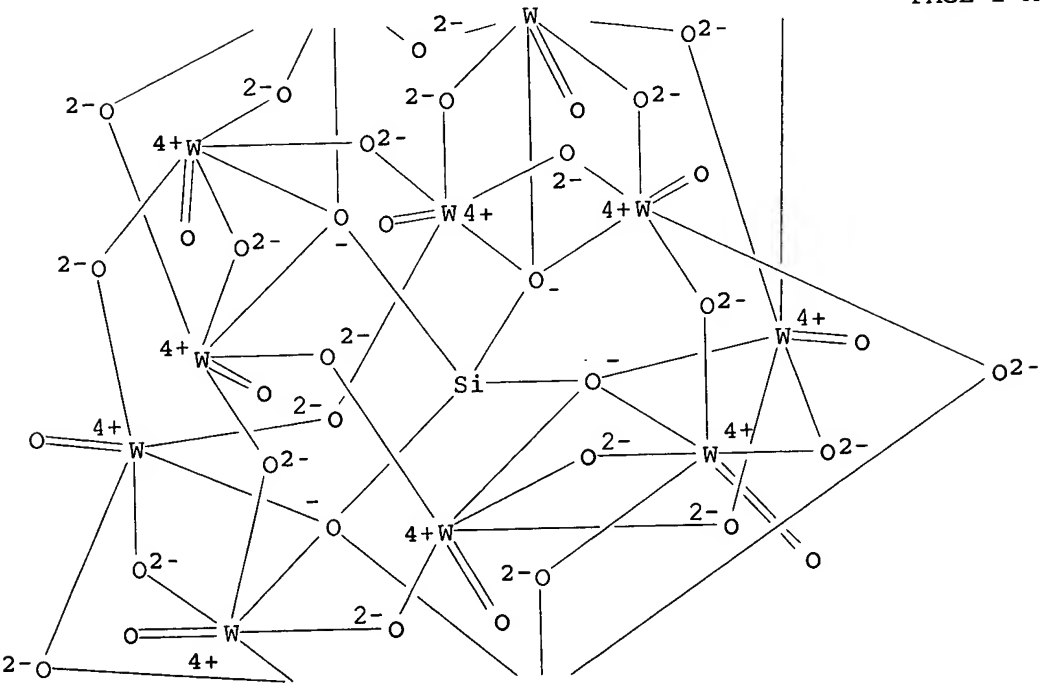
●<sub>4</sub> H<sup>+</sup>

```
RN      12027-38-2   HCAPLUS  
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp  
        a.O':κO':κO':κO'':κO'':κO'':κO''':.kap  
        pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen  
        (9CI)    (CA INDEX NAME)
```

PAGE 1-A

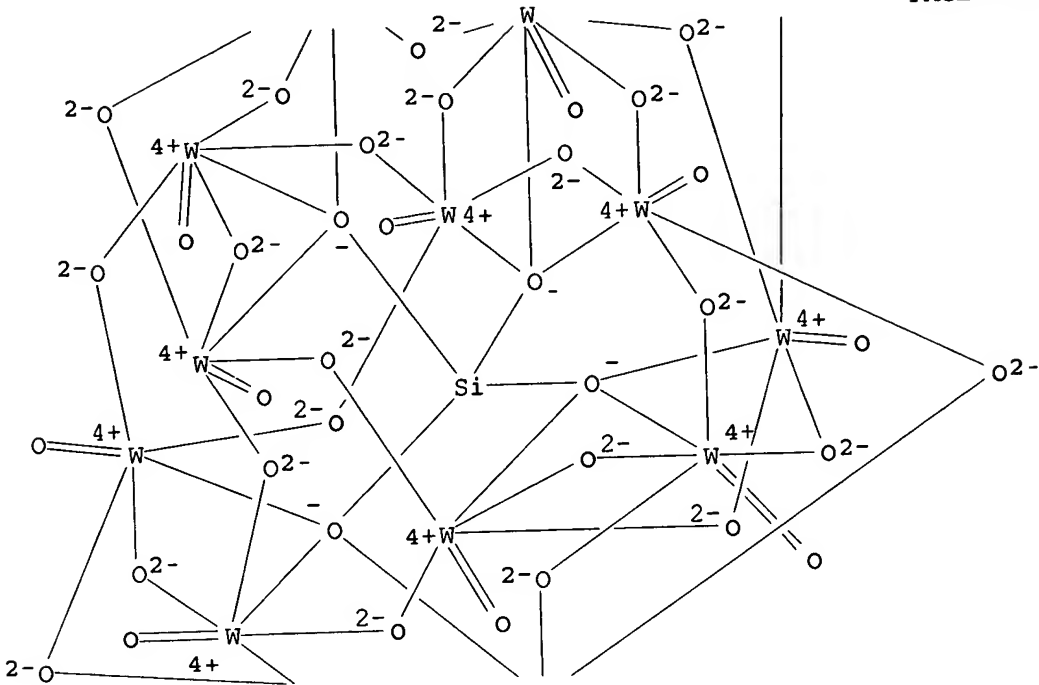


PAGE 2-A

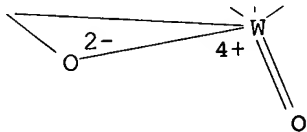




PAGE 2-A



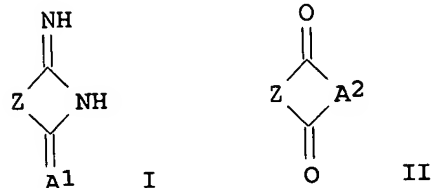
PAGE 3-A



●4 H<sup>+</sup>

L32 ANSWER 66 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 1995:735393 HCAPLUS  
DN 123:169502  
TI Preparation of imino compound by imination of dicarboxylic acid anhydride  
or imide  
IN Komya, Kyosuke; Konishi, Kazuhiro  
PA Asahi Chemical Ind, Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1  
PATENT NO. KIND DATE APPLICATION NO. DATE  
-----  
PI JP 07097366 A2 19950411 JP 1993-264068 19930929 <--  
PRAI JP 1993-264068 19930929 <--



OS  
GI

AB

IC

TCA

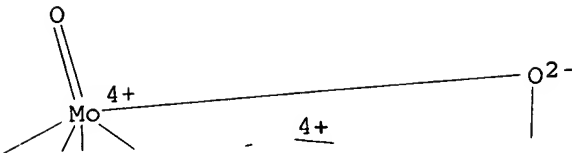
IT

IT

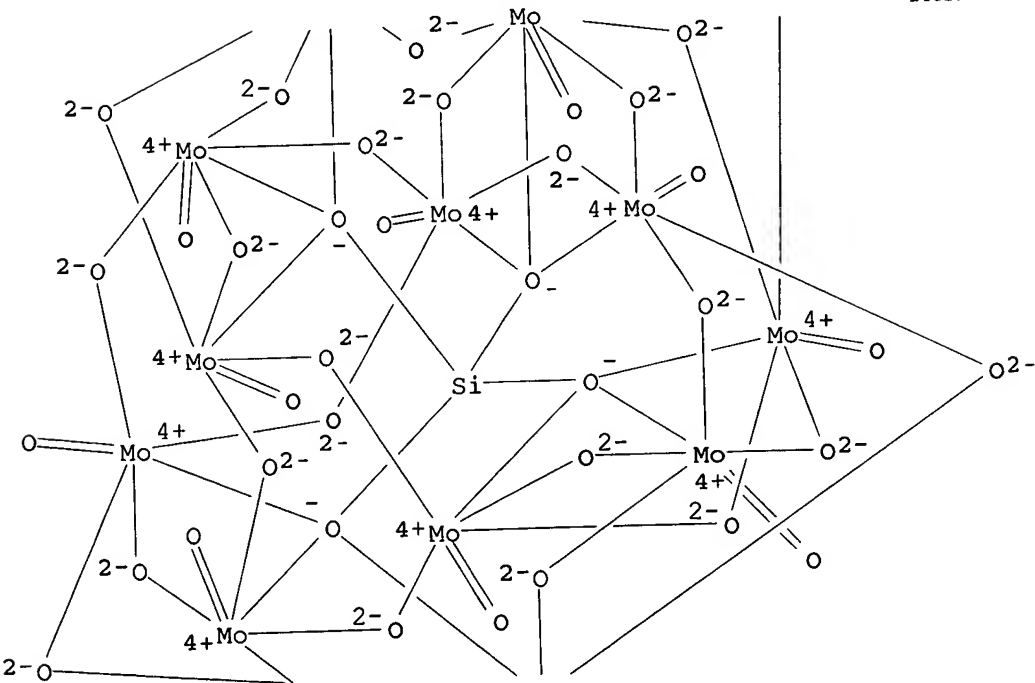
IT

RN  
CN

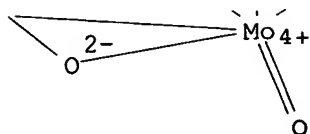
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 4 H<sup>+</sup>

L32 ANSWER 67 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1995:281516 HCAPLUS

DN 122:115871

TI A comparative study of the microporosity of the ammonium and cesium salts of 12-tungstophosphoric, 12-molybdophosphoric, and 12-tungstosilicic acids by xenon-129 NMR

AU Bonardet, J. L.; Fraissard, J.; McGarvey, G. B.; Moffat, J. B.

CS Lab. Chim. Surfaces, Univ. Pierre et Marie Curie, Paris, Fr.

SO Journal of Catalysis (1995), 151(1), 147-54

CODEN: JCTLA5; ISSN: 0021-9517

PB Academic

DT Journal

LA English

AB The Xe129 NMR method was applied to the ammonium and Cs salts of 12-tungstophosphoric, 12-molybdophosphoric, and 12-tungstosilicic acids, as well as to K 12-tungstophosphate. The exptl. data provide evidence for the presence of a homogeneous and organized pore structure. The ammonium salts produce similar pore openings of 9.0 Å (regardless of the composition of the anion) while those for the Cs salts depends on the nature of the anion.

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 67, 77

IT 12026-64-1, Cesium molybdophosphate (Cs3PMo12O40)

12026-66-3, Ammonium molybdophosphate ((NH4)3PMo12O40)

12026-91-4, Cesium tungstophosphate (Cs3PW12O40)

12026-93-6, Ammonium tungstophosphate ((NH4)3PW12O40)

12027-42-8, Cesium tungstosilicate (Cs4SiW12O40)

12207-66-8, Potassium tungstophosphate (K3PW12O40)

77981-80-7, Ammonium tungstosilicate ((NH4)4SiW12O40)

RL: CAT (Catalyst use); PRP (Properties); USES (Uses)

(Xe129 NMR study of microporosity in ammonium and cesium heteropoly salts)

IT 12026-64-1, Cesium molybdophosphate (Cs3PMo12O40)

12026-66-3, Ammonium molybdophosphate ((NH4)3PMo12O40)

12026-91-4, Cesium tungstophosphate (Cs3PW12O40)

12026-93-6, Ammonium tungstophosphate ((NH4)3PW12O40)

12027-42-8, Cesium tungstosilicate (Cs4SiW12O40)

12207-66-8, Potassium tungstophosphate (K3PW12O40)

77981-80-7, Ammonium tungstosilicate ((NH4)4SiW12O40)

RL: CAT (Catalyst use); PRP (Properties); USES (Uses)

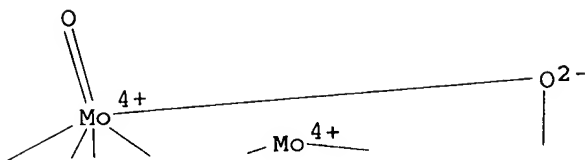
(Xe129 NMR study of microporosity in ammonium and cesium heteropoly salts)

RN 12026-64-1 HCAPLUS

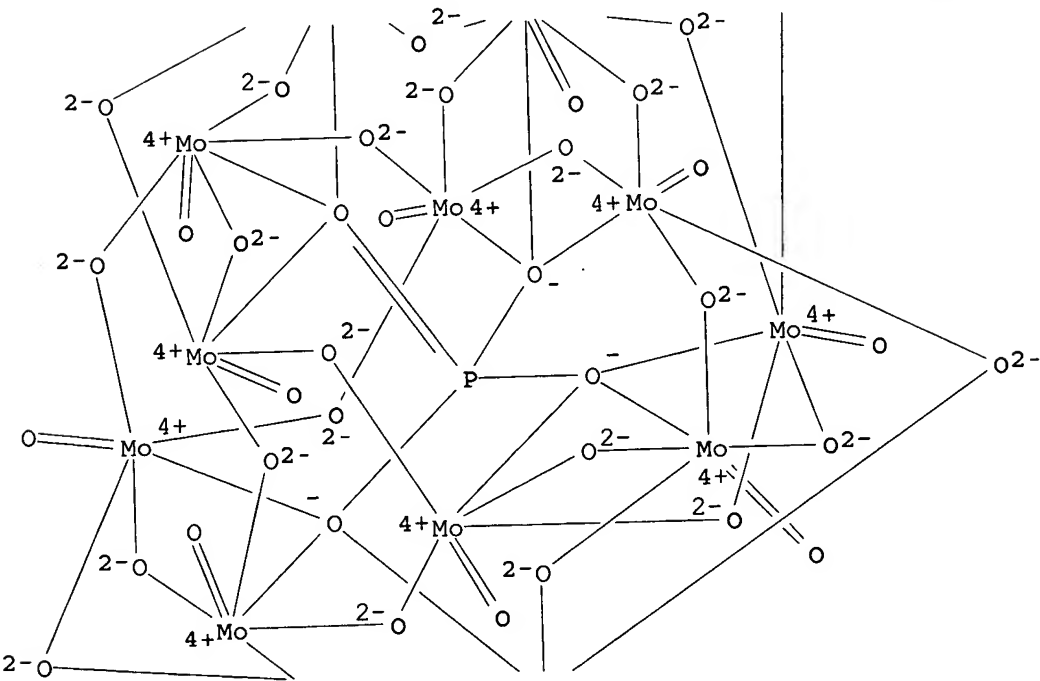
CN Molybdate(3-), tetracosamolybdododecaoxo[μ12-[phosphato(3-)-

O:O:O:O':O':O':O':O':O':O':O':O':O':O':O':O']dodeca-, tricesium (9CI) (CA INDEX NAME)

PAGE 1-A

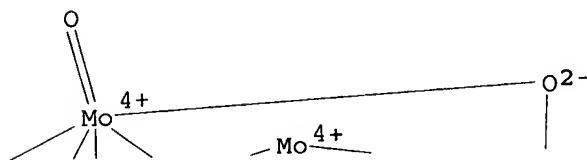


PAGE 2-A

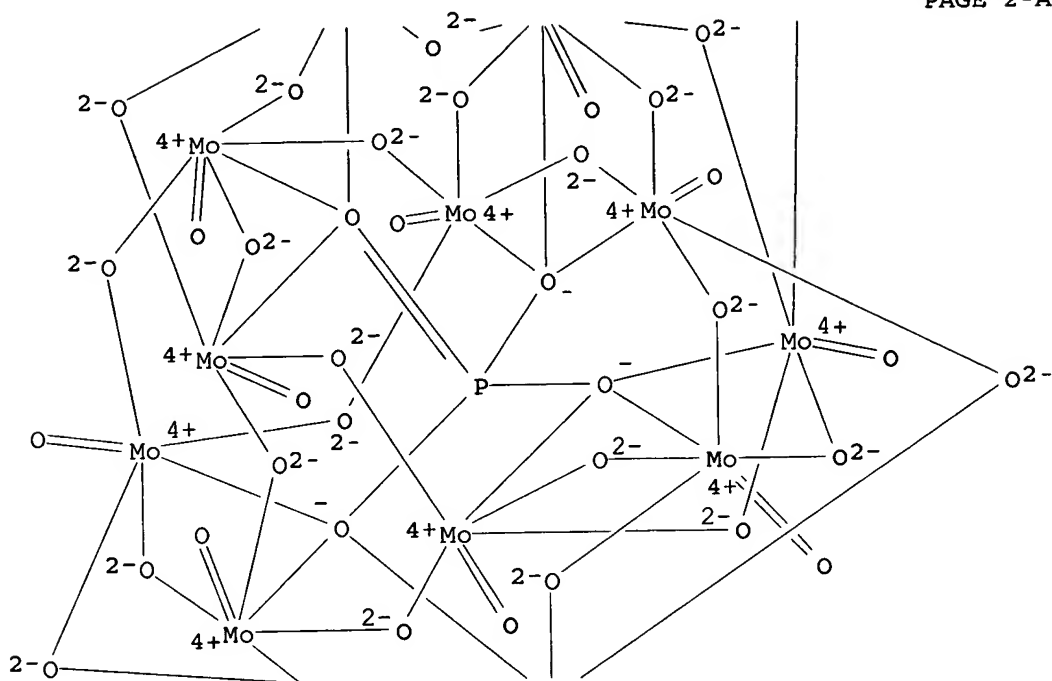


```
RN      12026-66-3   HCAPLUS  
CN      Molybdate(3-), tetracosamolybdato[μ12-phosphato(3-)-κO':κO':κO':κO':κO':κO':κO'::kappa.  
.O''':κO''':κO''':κO'''']dodeca-, triammonium  
(9CI)    (CA INDEX NAME)
```

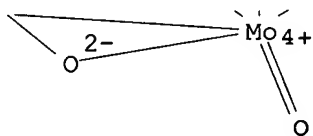
PAGE 1-A



PAGE 2-A

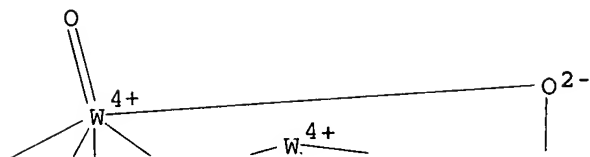


PAGE 3-A

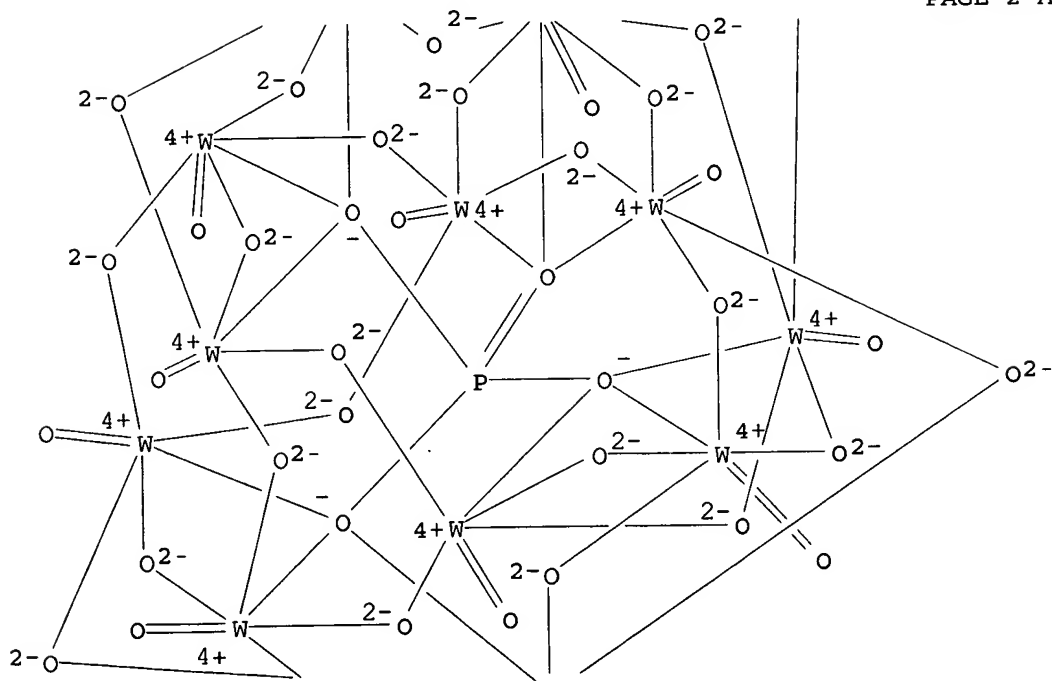
●3 NH<sub>4</sub><sup>+</sup>

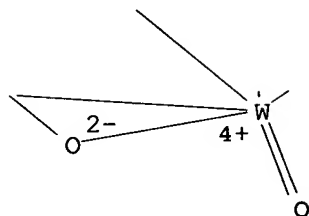
RN 12026-91-4 HCAPLUS  
 CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, tricesium  
 (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



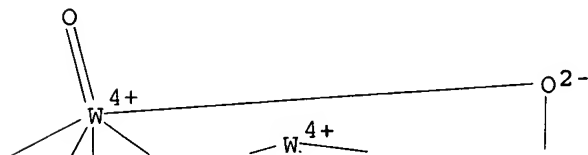


PAGE 3-A

●3 Cs<sup>+</sup>

RN 12026-93-6 HCAPLUS  
 CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':.kappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, triammonium  
 (9CI) (CA INDEX NAME)

PAGE 1-A





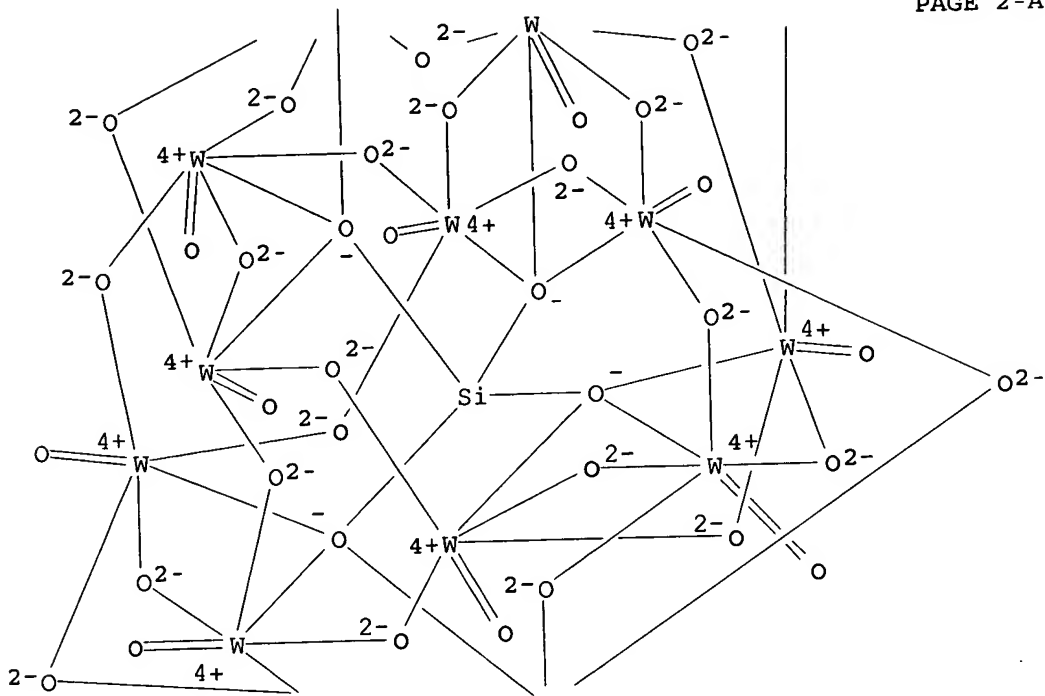
```

RN      12027-42-8  HCAPLUS
CN      Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO'':.kap
pa.O'':κO'']tetracosa-μ-oxododecaoxododeca-, tetracesium (9CI)
(CA INDEX NAME)

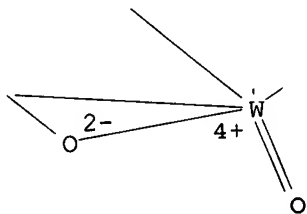
```

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



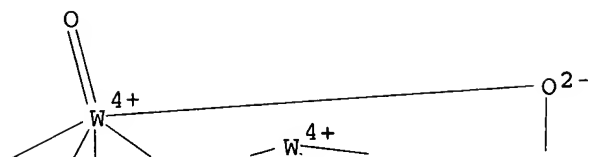
PAGE 3-A



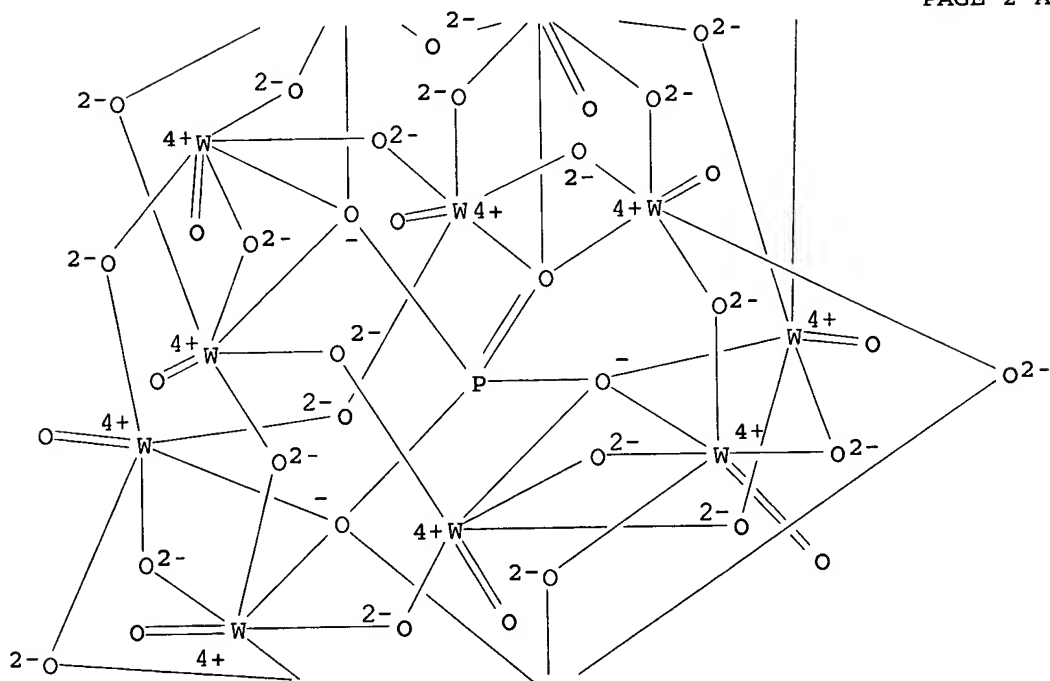
● 4 Cs<sup>+</sup>

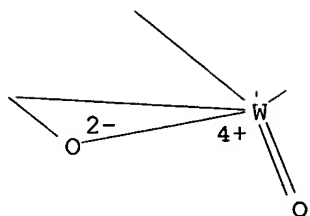
RN 12207-66-8 HCAPLUS  
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-  
κO:κO:κO:κO':κO':κO':κO'':κappa  
.O':κO':κO':κO':κO':κO'']]dodeca-, tripotassium  
(9CI) (CA INDEX NAME)

PAGE 1-A

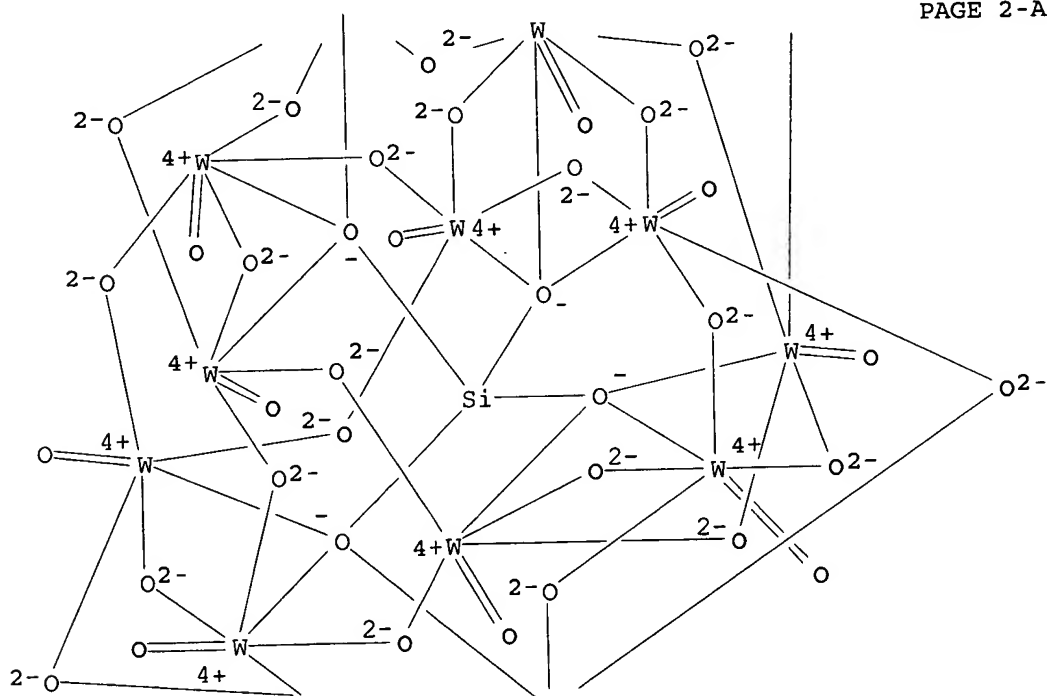


PAGE 2-A

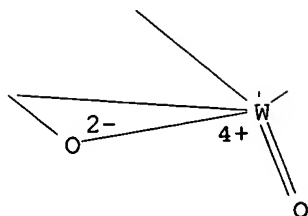


 $\bullet_3 \text{ K}^+$ 

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*



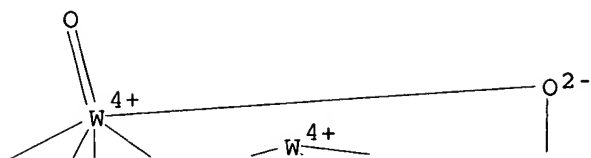
PAGE 2-A

 $\bullet_4 \text{ NH}_4^+$ 

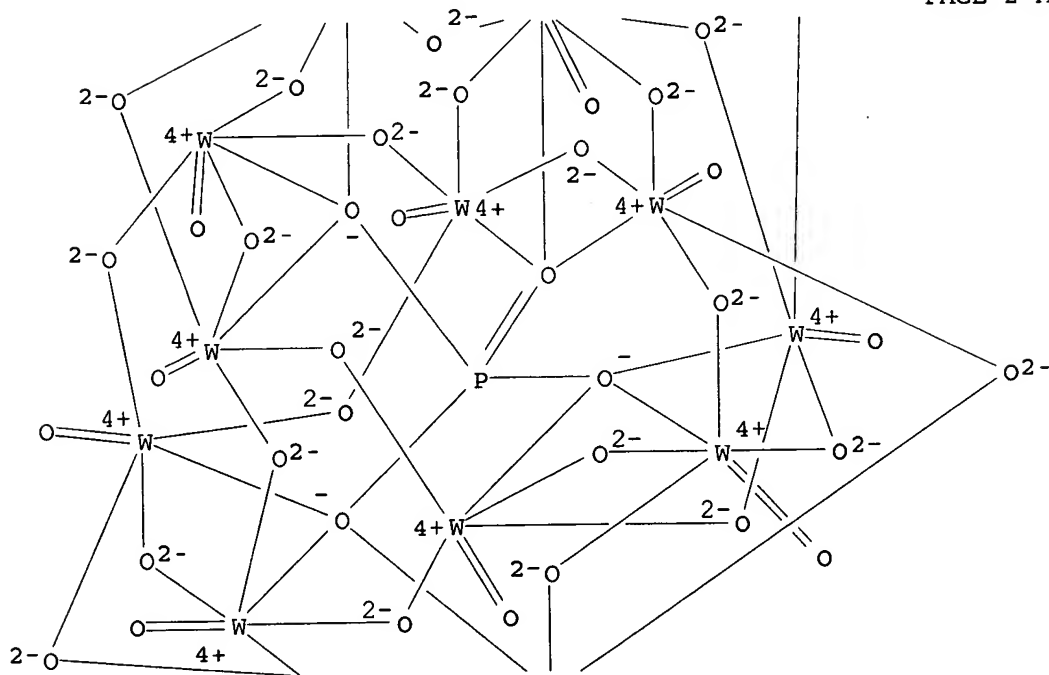
FAN.CNT 2

κO:κO:κO:κO':κO':κO''':.kappa  
 .O'':κO'':κO'':κO'':κO'']dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

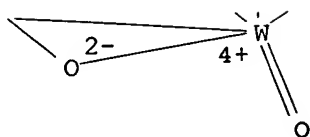
PAGE 1-A



PAGE 2-A



PAGE 3-A

● 3 H<sup>+</sup>

L32 ANSWER 69 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1995:92922 HCAPLUS

DN 122:9299

TI Role of water in polyoxometalate-catalyzed oxidations in nonaqueous media. Scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-butyl hydroperoxide catalyzed by H5PV2Mo10O40

AU Gall, Robin Damico; Faraj, Mahmoud; Hill, Craig L.

CS Department of Chemistry, Emory University, Atlanta, GA, 30322, USA

SO Inorganic Chemistry (1994), 33(22), 5015-21

CODEN: INOCAJ; ISSN: 0020-1669

DT Journal

LA English

OS CASREACT 122:9299

AB A range of heteropolyoxometalates catalyze the oxidation of thioether analogs of mustard (HD) to the corresponding sulfoxides by tert-Bu hydroperoxide (TBHP) rapidly at 25 °C, with selectivities as high as any seen in the literature for thioether oxidns. The strongly acidic complexes H3PW12O40 and H3PMo12O40 function primarily as acid catalysts for thioether oxidation by TBHP, producing sulfoxide with 98-99% selectivities (1-3% sulfone present) at modest conversions. Three lines of evidence involving the model compound, tetrahydrothiophene (THT), indicate that several vanadium-substituted heteropoly acids, including hydrated H5PV2Mo10O40 (1), are significantly more selective (>99.9%): (1) No sulfone (THTO2) is detectable at the limits (1 part in 105) of gas chromatog. and gas chromatog.-mass spectrometric analyses, (2) THTO and THTOH+ are both stable under the reaction conditions, and (3) (THTOH)4(H) (PV2Mo10O40) or (THTOH)4(H) (PV2Mo10O40) (THTO)2 (2), identified by NMR, IR, UV-visible, and elemental anal., is stable for a period of at least 1 mo under the conditions of the title catalytic reactions (homogeneous acetonitrile, 25 °C). The rates of thioether oxidation to sulfoxide catalyzed by 1, based on six aliphatic and aromatic thioethers, vary over a factor of more than 103 and do not correlate well with the thioether redox potentials. The data, including rates and selectivities of the reaction with and without TBHP, establish that these reactions proceed by initial thioether oxidation and polyoxometalate reduction followed by reduced polyoxometalate reoxidn. by TBHP. This mechanism is in sharp contrast to the conventional mechanisms for metal complex mediated peroxide oxidns. (electrophilic peroxide activation by the metal complex or radical processes). Two important and heretofore undocumented roles of H2O are consistent with the rate studies of THT oxidation by 1 in the absence of TBHP. First, the reaction is strongly inhibited by water and the rate law is  $v_0 = k[\text{THT}][1][\text{H}_2\text{O}]^{-1}$ . In the absence of water, the rate becomes independent of THT substrate ( $v_0 = k'[1]$ ) and dehydration of the polyoxometalate may be rate limiting. All the data, including the activation parameters ( $\Delta H_{\text{thermod.}} = 8.06 \pm 0.64 \text{ kcal mol}^{-1}$  and

CC 22-7 (Physical Organic Chemistry)

IT 104-15-4, p-Toluenesulfonic acid, uses 1343-93-7,  
Tungstophosphoric acid (H3W12P040) 7732-18-5, Water, uses

hydrogen tetrabutylammonium salts  
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

IT 12293-21-9, Molybdovanadophosphoric acid (H5Mo10V2PO40)

reagent); USES (Uses)  
(IR and role of water and scope, kinetics, and mechanism of oxidation  
of thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by  
polyoxometalates in nonaq. media)

IT 1343-93-7, Tungstophosphoric acid (H3W12P040) 12026-57-2

1343-93-7, tungstophosphoric acid (H3Mo12PO40) 12786-62-8  
 , Molybdophosphoric acid (H3Mo12PO40) 12786-62-8

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

process); PROC (Process); USES (Uses)  
(role of water and scope, kinetics, and mechanism of oxidation of  
thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by  
polyoxometalates in nonaq. media)

RN 1343-93-7 HCAPLUS

RN 1343-93-7 HCAPLUS  
CN Tungstate(3-), tetracosam-oxododecaoxo[μ12-[phosphato(3-)-

$$\kappa_0 : \kappa_0 : \kappa_0 : \kappa_0' : \kappa_0' : \kappa_0' : \kappa_0' : \dots \kappaappa$$

```

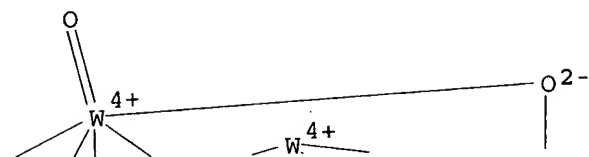
kO:kO:kO:kO' kO':kO':kO':kO'::kappa
.O'' :kO'' :kO''' :kO''' :kO''']dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

```

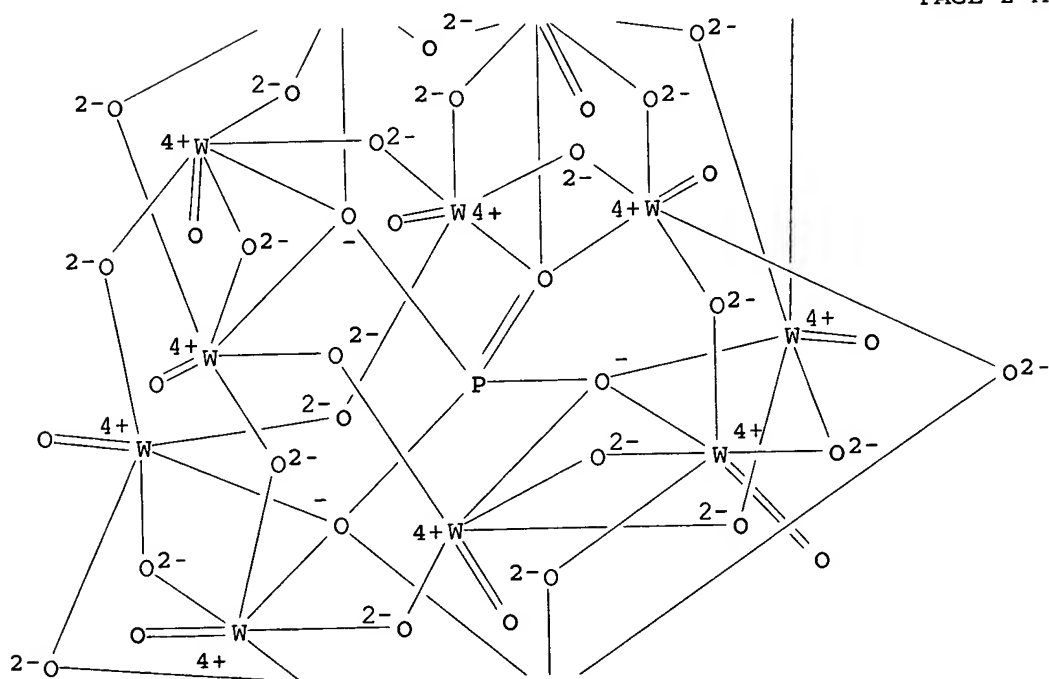
KATHLEEN FULLER EIC1700 REMSEN 4B28 571/272-2505



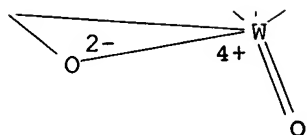
PAGE 1-A



PAGE 2-A

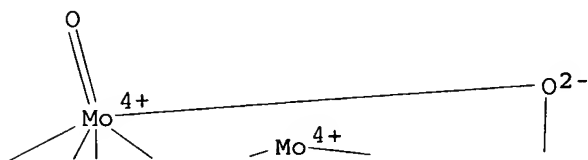


PAGE 3-A

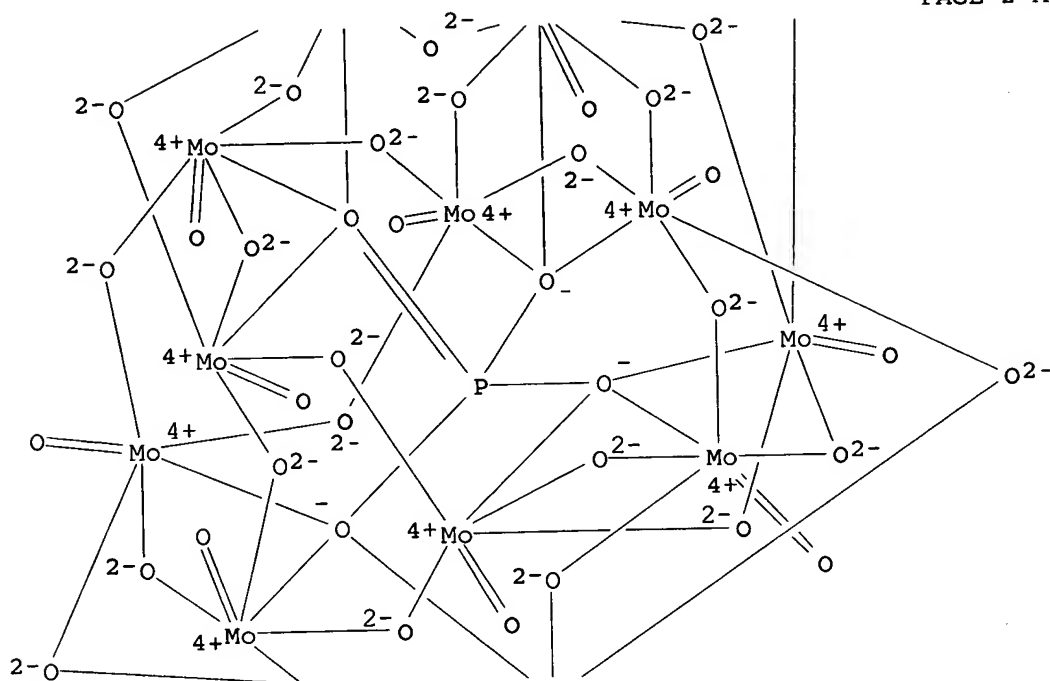
● 3 H<sup>+</sup>

RN 12026-57-2 HCAPLUS  
 CN Molybdate(3-), tetracosamolybdo-μ-oxododecaoxo [μ12- [phosphato(3-)-  
 κO:κO:κO:κO':κO':κO':κO'':κappa  
 .O':κO':κO':κO':κO':κO'']]dodeca-, trihydrogen  
 (9CI) (CA INDEX NAME)

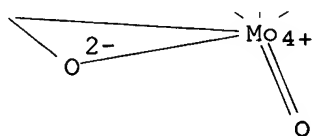
PAGE 1-A



PAGE 2-A



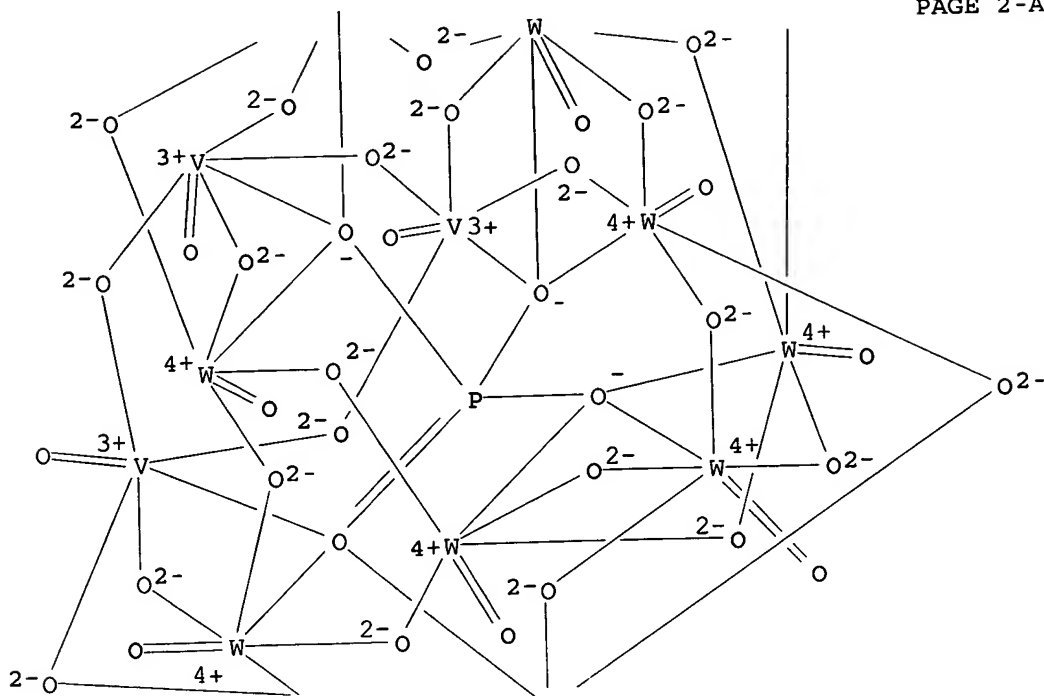
PAGE 3-A

● 3 H<sup>+</sup>

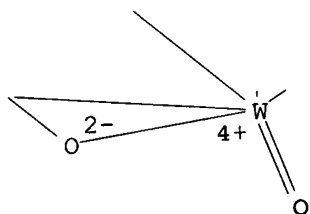
RN 12786-62-8 HCAPLUS  
 CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxonona-oxononatungstate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κappa.O'':κO'':κO'':κO'':κO'':κO'']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



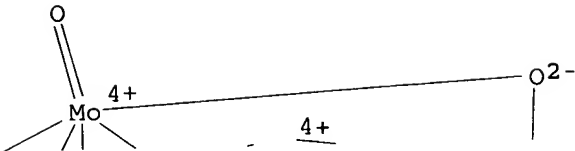
PAGE 3-A

●6 H<sup>+</sup>

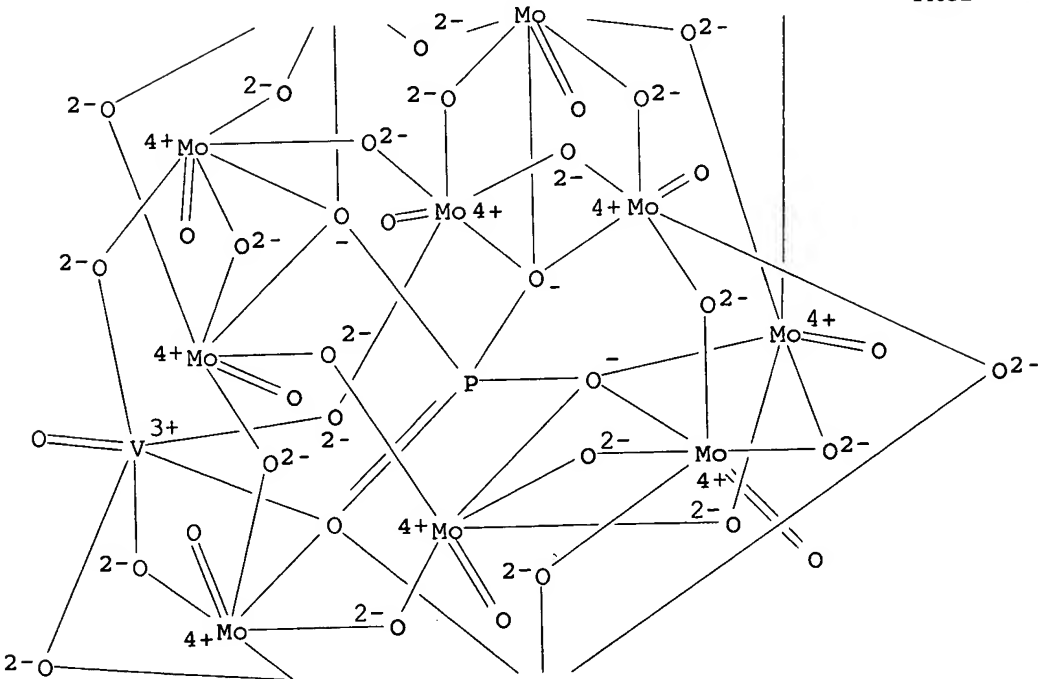
IT 12293-21-9, Molybdovanadophosphoric acid (H5Mo10V2PO40)  
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)  
 (IR and role of water and scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by polyoxometalates in nonaq. media)

RN 12293-21-9 HCAPLUS  
 CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO':.kappa.O':κO':κO':κO':κO':κO':κO':.ka.ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



L32 ANSWER 70 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN

DN 115:121046

TI Acid-base properties of hydrogen phosphomolybdate (K2PMo12O40) supported on potassium phosphomolybdate (K2PMo12O40)  
 E. M. Bruckman, K. J. Haber, J. Paukstis, E. Yurchenko, E. N.

AU Serwicka, E. M.; Bruckman, R.; Haber, S.; Iwanowski, J.  
CS Inst. Catal. Surg. Chem., Pol. Acad. Sci., Krakow, 30-239, Pol.

CODEN: APCADI; ISSN: 0166-9834

LA English

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

IT 12026-68-5

CAT (Catalyst use); USES (Uses)  
(catalysts from vanadium phosphomolybdate heteropoly acids  
and, acidity of, effect of amount of vanadium substitution on)

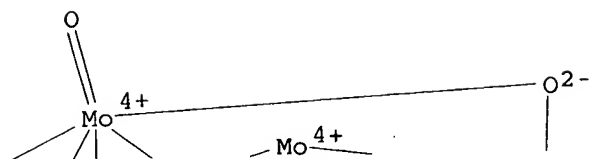
IT 12026-68-5

: CAT (Catalyst use); USES (uses)  
(catalysts from vanadium phosphomolybdate heteropoly acids  
and, acidity of, effect of amount of vanadium substitution on)

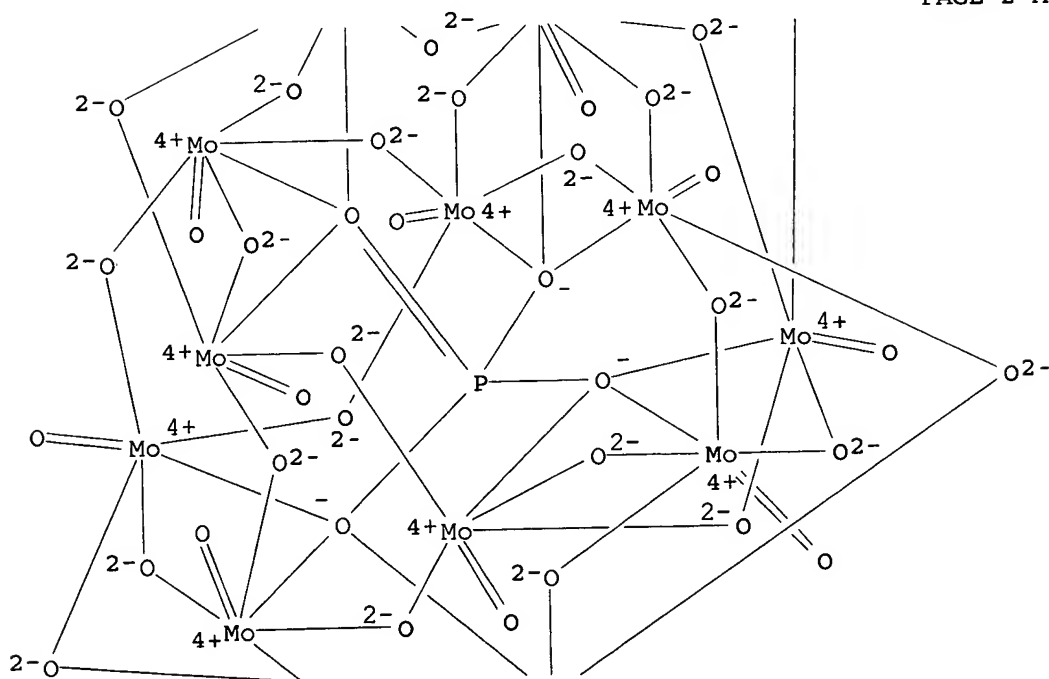
RN 12026-68-5 HCAPLUS

[illegible]

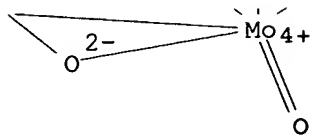
PAGE 1-A



PAGE 2-A



PAGE 3-A



●3  $\text{K}^+$

=>